RailwayAge

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July 25, 1925

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Railroad Club Programs

MOST of the railway clubs are now developing their plans for next season. As the clubs have grown in size and have broadened their activities to include representatives of all departments, the problem of building a well balanced program which will appeal to the members in general has become more and more difficult. Then, too, more emphasis is being placed upon promoting acquaintanceship between men in different departments on the same road, or between railroad men in the community in general. For this reason several of the clubs have been giving more and more attention to social and entertainment features. One important development during the past season was the use by the New York and Central clubs of railroad glee clubs. It looks very much now as if during the coming season there might be considerable rivalry in the way of entertainment features furnished by railroad groups and extending all the way from glee clubs and orchestras, to vaudeville acts and other forms of entertainment. This promises not only to add to the interest of the meetings, but to stir up a larger interest in the clubs. Care must, of course, be exercised to see that these features do not interfere with the more serious or technical side of the program. Judging from the experience of the Central and New York clubs, however, these features add greatly to the club attendance and can be worked in nicely without interfering with the technical features.

New Records of Efficiency

 T^{HE} progress being constantly made by the railways in increasing the efficiency of operation is illustrated by operating statistics published by the Interstate Commerce Commission for April, the latest month for which they are now available. In that month freight trains were moved an average of 12 miles an hour. This is the highest record ever made in any month in history, although it has been closely approached before. It was made in spite of the fact that in each of the first four months of the year the average number of freight cars handled per train exceeded the best previous record for the same month. The average number of cars per train in the first four months of 1924 was 40, while in the first four months of 1925 it was 42.1. In April, 1924, the average was 41.3, while in April, 1925, it was 43.6. The railways also have been making new records of economy in the use of coal. In spite of the high average speed of freight trains in April, they made a new low record for that month in the consumption of coal. The average amount consumed per 1,000 gross ton-miles of freight service rendered was only 138 pounds as compared with 152 in 1924, 153 in 1923, 159 in 1922 and 162 in 1921. The average consumption of coal per 1,000 gross ton-miles in the first four months of the year was 151 pounds as compared with 166 pounds in the corresponding period of 1924. The roads rendered

slightly more freight service in the first four months of this year than in the corresponding period last year, but reduced the consumption of coal in road freight service from 29 million to 27 million tons. It is the cumulative effect of these steady improvements in operation which result from capital expenditures and continuous study and effort by executive and operating officers that make our railways the most efficient and economical freight carriers in the world.

The Early Bird Wins Again

STREET railway company which found its revenues seriously threatened by bus competition at length decided to go into the business itself, and recently started buying in large numbers the permits of competing bus operators. Practically all of these permits cost the street railway company amounts far in excess of the physical property going with them. Only a week or two ago four such permits were acquired at a price reported to be \$31,000 each. Physical property going with each permit -two used buses-probably did not amount to more than \$12,000, leaving \$19,000 as the penalty the company had to pay on each of these permits for being so late to enter the business. The obvious moral is that, where there is any possibility of an old established transportation company going into the field of highway transportation, an early investigation of its possibilities and an early decision of yes or no is the wise policy. Coming into the field after many well-paying routes have been well established by enterprising outsiders is a costly business. bird gets the worm in this field as well as another, and subsequent comers will pay him well—perhaps ex-orbitantly—to get him to relinquish it. This does not, of course, mean that all railways-or even many of themshould be interested in highway transportation. It does suggest, however, that those which are so situated that they they are likely to be forced in that direction eventually might save money by surveying the field and coming to an early decision regarding it.

What to Look for in Brake Beams

SOME brake beams are purchased in accordance with individual railroad specifications but, more often, bids are requested and a particular make of brake beam selected which is known to meet the American Railway Association test requirements. The latter method particularly develops competition on a price basis between the various manufacturers of brake beams, and within certain bounds is to be desired, resulting in the roads getting the most for their money. Experience has shown, however, that this competition may be stimulated and encouraged to such an extent that the winning bidder gets the business at a price below which it is possible to turn out a thoroughly reliable product. What is the result? There

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are tricks in making brake beams as in every other trade. It is readily possible for the experienced manufacturer to turn out a cheap beam which will just meet the tests but fail quickly in service, and be expensive for the railroad to purchase at any price. The following are some of the corners cut to meet a prohibitively low brake beam price: Inferior, non-homogeneous material used; weight cut down by reducing the compression channel section slightly, using rods slightly under-size, skimping in brake head design, with fillets reduced or eliminated, and wall sections thinned; reducing the strut length slightly so the lightweight beam will just make the test, etc. A brake beam thus made can hardly be told by its appearance from one containing the additional material needed to make all the difference between a brake beam giving satisfactory service and one which does not. Sometimes hot pressed nuts with the burrs not removed are used, and after the first few brake applications the burrs become flattened down and the beam loses its rigidity. In service on the road this inferior beam is subject to breakage, rapid wear and distortion, with resultant false piston travel, rough handling and perhaps train delays. Moreover, maintenance cost with the light-weight brake beam is no insignificant figure. Brake beams, like clothes and many other articles used by railroad men in their professional capacity and personally should be purchased with judgment. It is not consistent for railroad officers who would not think of buying the cheapest suit of clothes available to insist on a price for brake beams or any other material so low as practically to assure the railroad getting an inferior product.

No Need for a Factor of Carelessness

THE fabricators of structural steel, through the agency of an organization known as the American Institute of Steel Construction, have met with considerable success in their proposal to increase the working unit stresses in structural steel. The institute has sponsored new specifications for steel buildings which provide for a unit working stress of 18,000 lb. per sq. in. instead of 16,000, as commonly used heretofore, and is now actively engaged in promoting the adoption of these specifications, primarily in urging their acceptance or incorporation in city building codes.

This movement was brought into being by the influence of competition with other materials used in building construction, notably reinforced concrete. Obviously the higher the unit stress permitted in any material the smaller the quantity of that material required in a given building and the more favorable any comparison of costs between a design embodying that material and one in which some other material is being used. The use of the higher stresses is therefore clearly in the interest of the steel fabricators. But if the increase in stress is entirely legitimate and entirely within the bounds of safety it is also very definitely in the interest of the building owner because it means that a building designed for a particular use can be built more cheaply than if the lower unit stresses are followed.

Those who object to the higher stresses are prompted by the thought that the lower stresses afford a greater factor of safety against the unforeseen condition and point to the fact that failures of steel buildings do occur from time to time. The answer given to this objection is that such failures as have occurred have been the result of loose practices in carrying out the work—slovenly or inaccurate design and a lack of supervision of the fabrication and erection, and that the cure lies in the correction or elimination of these objectionable practices by educating building owners to employ competent architects or engineers rather than to use a low unit stress with the hope that sufficient steel will be provided in the design to insure safety in spite of improper design and workmanship.

Whatever the merits of these arguments they should have no place in the consideration of this subject from the standpoint of railway structures. Either a railway should be possessed of an organization of its own for the proper design and inspection of buildings constructed for its use or its management should exercise sufficient prudence to retain whatever technical assistance is necessary to insure that whatever buildings it requires are properly designed and honestly constructed. Therefore, any consideration of the use of higher unit stresses in structural steel building required by the railroads should be predicated solely on the merits of the higher stresses as actual working stresses without regard to any feeling that these stresses must be low enough to provide a factor of safety against unintelligent design or a failure to adhere to specifications for material and workmanship.

The Value of Experience

Is an experienced employee more valuable than one without training? If so, how much of an effort is a road warranted in making to retain him in its service? These are questions which affect all branches of railway operation, but none more than the maintenance of way department. Here the turnover is unusually large because of the competition of other industries. Even more directly it is the result of fluctuations in the forces for which the roads themselves are responsible. Not only is the practice of reducing the forces to a "winter basis" practiced by most roads each fall, but most of them also experience at least one wave of retrenchment each summer when a portion of their forces are laid off for a time and probably lost to other industries, or all of the men are placed on part time which likewise drives the better men elsewhere.

It does not require an economist to demonstrate the influence of such practices on the cost of work. Only the most elementary calculations are required to show—what industry in general has long since realized—that a permanent force makes for maximum production and minimum cost. Therefore, instead of penalizing experience by discouraging its accumulation, successful industries have long since learned to conserve it.

It is said, and with much truth, that maintenance of way work is seasonal in character. This condition is over worked, however, and is as much an excuse as a reason for the "hire and fire" policy of most railroads. Not a few roads which have given the problem of permanency of employment careful consideration of late are finding that a surprisingly large amount of work can be done during what has previously been considered the period of inactivity, thus justifying the retention of a larger force throughout the winter and making it unnecessary to employ a corresponding extra force during the summer. Some of these roads have already progressed to the point where the fluctuations between their "summer" and "winter" forces have been cut in half.

It is also said that work done in the winter costs more than that done in the summer because of the adverse weather conditions which prevail. Here again actual experience has shown that this fear is exaggerated. Not id

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only has it been found that the days on which it is difficult to work are fewer than anticipated, but the handicaps of working on the better days are less than generally believed. As a result, statistics compiled by some of the roads which have made a practice of doing increasing amounts of work during the winter show the cost of this work to be little, if any, higher and in some instances actually lower than the cost of similar work done during the summer. Furthermore, a consideration which is not generally taken into account is that a part of the force employed in these constructive operations would necessarily be retained to meet the emergencies which arise from time to time during the winter and the productive work secured from these men in the meantime is in reality a net saving.

When this is taken into consideration, the economy of winter work is marked.

A still further consideration is the fact that the experience of those men who are retained throughout the winter accrues to the benefit of the roads in all of the work which they perform throughout the remainder of the year. While the ideal of a permanent, all-the-year-round maintenance of way force with a minimum turnover may never be realized, it can be approached far more closely than at the present, with a corresponding improvement in the standards of work done and a reduction in its cost, all things considered. The development of such a program should not be confined or left solely to the officers of the maintenance of way department, for the possibilities are sufficiently great to warrant the attention of executive officers as well.

Regulation of Rates

THE application of the western railways to the Interstate Commerce Commission for a general advance in rates has caused to be raised some old and also some new questions regarding the regulation of rates. The new questions relate especially to the way in which any revenues derived from an advance in rates at this time should be distributed among the carriers concerned.

As a result of prolonged discussion of the subject there has seemed within recent years to exist a consensus of opinion among students of railway economics on the main principles according to which rates should be regulated. These principles are set forth in the Transportation Act as definitely as they probably could be in any statute. One of them is that the shipper or traveler is entitled to have each rate made just and reasonable. In this sense a rate is just and reasonable if it is fair in proportion to the cost incurred by the railway in rendering the particular service and to the value of the service to the shipper or traveler, and is not unfairly discriminatory as compared with other rates. A railway is not entitled on any ground to charge a rate that is unreasonable as measured by these standards.

Another principle recognized by the Transportation Act is that if each rate and the entire schedules of rates of a group of railways can, without being made excessive, be made sufficiently high to enable the railways of the group to earn a fair average return upon the aggregate value of their property, then the rates must be made high enough by the Interstate Commerce Commission to enable them to earn this fair average return.

It is well known the commission has held that the return it should allow the railways of each large group to earn in order to fulfill the purposes of the law is 534 per cent on the aggregate value of their property. It is

also well known that never since the commission made this ruling have the western roads earned a fair return, no matter what standard of measurement may be used. If we take the tentative valuation placed by the commission on these roads in 1920 and add to it the investment in property since made it is found that in 1924 they failed by more than one hundred million dollars to earn what the commission has held to be a fair return. On the basis of the earnings and expenses of 1924 it would require an average advance in freight rates of more than six per cent to produce this additional amount of revenue. The railways, however, do not accept the tentative valuation as a fair basis of computation. They believe their property investment accounts more nearly represent the value on which they should be allowed to earn a fair return.

They failed in 1924 by more than 180 million dollars to earn a 5¾ per cent return on their aggregate property investment account. To enable them to earn this additional net return would require an advance in freight rates of about eleven per cent.

One duty of the commission is to determine what advance in rates would be necessary to enable the roads to earn a fair return. Another of its duties is to determine whether, if rates were so advanced and readjusted as to enable the carriers as a whole to earn a fair return, the rates as a whole or any of them would be made unfairly discriminatory or excessive in proportion to what shippers and travelers can reasonably be asked to pay. A proposal has been made that freight rates be advanced only five per cent and that the added revenue resulting be pro-rated among the railways in western territory in proportion to the extent to which they have been failing to earn a fair return.

Those who oppose advances in rates in western territory will find it difficult or impossible to show that a general advance sufficient to enable the railways to earn a fair return would make rates as a whole unreasonable and unjust in proportion to the value of the transportation service rendered. The average freight rate per ton per mile in this territory is now only about 37 per cent more than it was before the war in Europe began. Prices of commodities are good measures of the value of the service rendered, and the average wholesale price of all commodities is about 55 per cent higher than it was before the war. The prices of farm products have advanced greatly since the Interstate Commerce Commission held that the present rates on them were reasonable, and now average 52 per cent higher than in 1913. This being the situation it would seem that the western roads have a very strong case for an advance in rates which would enable them as a group to earn a return of 53/4 per cent on a fair valuation.

The Transportation Act clearly contemplates that if an advance in rates sufficient for this purpose should be made each road should keep all the revenues derived from the traffic handled by itself unless it should earn a return of more than six per cent on the value of its property. If it should earn more than this the law requires it to pay one-half of the excess over to the Interstate Commerce Commission and to put the other half into a reserve fund of its own until this fund amounts to five per cent of the value of its property. How, then, would it be possible legally to carry out the plan for pooling the earnings derived from an advance in rates? Could the management of a railway which earned less than six per cent lawfully take part of its net operating income and put it into a pool to be divided with other railway companies? Could a railway which earned more than six per cent, in

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view of the provisions of the recapture clause, take any part of its earnings over six per cent and put them into a pool to be divided with other railways, at least before its own reserve fund had been built up to 5 per cent? As the Railway Age reads the law of property in general and the recapture provisions of the Transportation Act in particular no railway company could lawfully take part of its earnings and put them into a pool to be divided

as suggested. There are also economic factors to be considered. The net operating income earned by a railway company is not determined entirely by conditions beyond its control. It is also largely determined by the way the property has been and is managed; and if all the net return earned by a railway company in excess of a certain percentage were taken from it the incentive to try further to increase its net return by increased efficiency and economy of operation would be destroyed. The framers of the Transportation Act recognized this and therefore provided that a railway might retain for its own purposes not only all it earned up to six per cent but one-half of all it earned in excess of that amount. The real trouble with the railway situation in western territory is that the general level of rates is too low. It was plainly contemplated by the framers of the Transportation Act that when such a situation existed there should be made advances in rates which would make their general level high enough to enable the roads as a whole to earn a fair return; and that each road should keep all the increased revenue earned by it unless this would enable it to earn more than six per cent. The proposed plan would tend both to prevent the roads as a whole from earning a fair return, and to enable individual railways to earn net return, not in proportion to their traffic conditions or the efficiency of their operation but in proportion to their financial needs. Now, if the net return of an entire group of roads is inadequate this is almost certain to be due to conditions beyond the control of most of them, but the differences in the acuteness of their needs, like those of individual men, are almost certain to be due largely to their own conduct. Basing the net return that individual railways may earn and keep on their financial needs to a greater extent than already is done by the Transportation Act would work injustice to both the railways and shippers. It would take so much from the more successful roads as unduly to undermine the incentives to efficiency. It would involve using earnings derived from rates paid by shippers in one territory to help support transportation service rendered the shippers in entirely different territories.

Futhermore, the plan in question would set the dangerous precedent of an abandonment by the railways of their moral and legal rights. The railways of each territory are morally and legally entitled to earn as a group a fair return on the aggregate value of their property if there can be made rates otherwise just and reasonable which will produce such a return; and when such a return is earned each road has a moral and legal right to participate in it to the extent of its earning capacity as deter-mined by the volume and character of its traffic and the wisdom and ability of its management. The maintenance and application of these principles in the long run is vital to the success and continuance of private ownership and management of railways. The situation of individual railways changes greatly in periods of years. A large part of the so-called "weak" railways of today were strong roads ten years ago and vice-versa. Perhaps similar changes will occur during the next ten years, and the regulation of rates should not be based upon temporary conditions but on sound principles susceptible of general and permanent application.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Public Utilities in Modern Life, by Samuel Insull. Collection of addresses. See Index for references to railroads. 426 p. Privately printed, Chicago, Ill.

Railroads—Cases and Selections, edited by Eliot Jones and Homer B. Vanderblue. Compilation of important ICC and Supreme Court decisions, articles by authorities, maps, etc., on railroad expansion, rates, service, finance, consolidation, labor and regulation, to accompany Prof. Jones's Principles of Ry. Trans., and Prof. Vanderblue's and Mr. Burgess's Railroads: Rates—Service—Management, but of especial interest also to persons wishing authoritative material in convenient form. 882 p. Published by Macmillan, New York. \$4.25.

Foreign Trade Bulletins. Publications of the U.S. Bureau of Foreign and Domestic Commerce. See index for bulletins relating especially to railroads and transportation, 106 p. Pub. by Govt. Print. Off., Washington, D.C.

Locomotives of the Southern Railway, 1925. Includes map and historical sketch of the Southern Railway System of Great Britain and its motive-power. 35 p. Pub. by Southern Railway, London, England. 1 shilling.

Periodical Articles

A Cadet System in Railroad Service, by William J. Cunningham. Presents plan for recruiting from employees and college men and for training, men for official positions. Harvard Business Review, July 1925, p. 404-413.

Carrying It to Market, by T. C. Powell. Intricacies of transportation of farm products. Country Gentleman, July 18, 1925, p. 8, 30.

"Competition Is the Life of Trade," by Philip Cabot. An accepted slogan and what it has meant to various industries. Harvard Business Review, July, 1925, p. 383-393.

One Hundred Years of Railways. Pictures showing events of celebration of British Railway centenary at Faverdale Works, London and North Eastern Ry., Darlington, Eng. Modern Transport, July 11, 1925, Pictorial supplement [4 p.].

The Present Railroad Situation, by Francis H. Sisson. What increasingly efficient operation has meant to industry. Spur, July 15, 1925, p. 72.

A Transportation Necessity, by Alfred P. Sloan, Jr. Motor vehicles and their co-ordination with railroad and other transport. Spur, July 15, 1925, p. 60, 107.

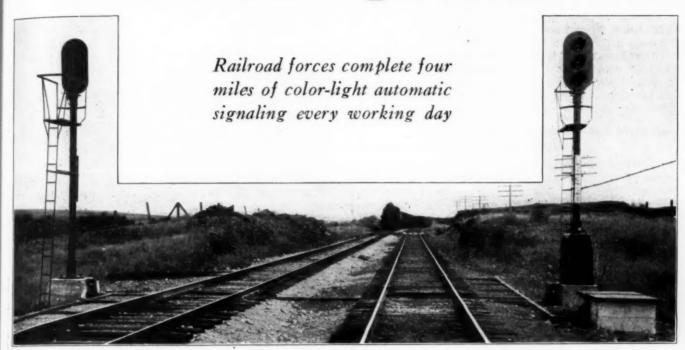
State Regulation of British Railways. No. I—Historical, by R. W. Pinder. Modern Transport, June 6, 1925, p. 5, 7.

Railroad Service and Easy Money. Editorial comment on improved railroad service. Barron's, June 29, 1925, p. 9.

Your Business and Mine, by George E. Roberts. Prospects in crops, trade and work for rest of 1925. Carloadings as indices of trade activity, p. 35-36, railroads as buyers, p. 41-42. American Review of Reviews, July, 1925, p. 35-43.

The Railway Centenary. Punch reviews, with illustrations, his reactions towards railroads since the first issue of July 17, 1841. Many famous railroad cartoons republished. Supplement to Punch, July 1, 1925, p. 1-16.

Great Northern Signals Main Line



Typical Double Light Signal Location on Great Northern

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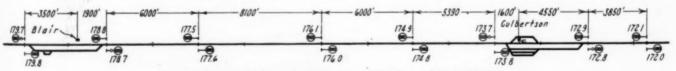
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THE GREAT NORTHERN has, during the last four years, made rapid progress towards the completion of the signaling of its principal main lines and the 1926 program will finish the signaling from St. Paul, Minn., to Seattle, Wash., 1,795 miles of line. Of the 8,000 miles of road in passenger service on the Great Northern, 2,707 miles are now equipped with automatic signals which include 348.6 miles of double track main line and 1372.8 miles of single track main line. During each of the last four years the signaling program has included from 300 to 500 miles and the schedule for 1926

department in 1905 a progressive signaling program has been carried on. Interlockings of railroad grade crossings, draw bridges and junctions came first on this program, totaling to date 132 plants, 5 of which are all-electric. Approximately 2,300 working levers are included in these plants. Automatic interlockings are used for certain grade crossings and at other places, as will be described later.

During the years 1910 to 1916 the greater part of the mileage in the Rocky and Cascade mountains was equipped with automatic signals. In the several years



Plan of Typical Signaling Between Sidings on Single Track

covers 350 miles of alternate main line routes in North Dakota.

Each year the new automatic signaling is completed and placed in service before September 1, in time to assist in moving the heavy traffic during the autumn. The Great Northern handles its signal construction by its own forces with an organization capable of completing an average of four miles of automatic block signaling each working day. That this organization is efficient is demonstrated by the fact that a saving of approximately \$1,000 per mile is claimed by the Great Northern in comparison with the available cost figures of automatic signaling on other similar roads handling such work by contract.

Program Includes Progressive Development

Prior to 1905 the signaling of the Great Northern included interlocking plants and a limited mileage of automatic signals on the Missabe division where a heavy ore tonnage is handled. Since the organization of the signal

during the war period experience proved that the automatic signals were of material assistance in increasing track capacity, especially during the heavy traffic seasons. As a result of the experience of these benefits it was decided to equip the remainder of the main line mileage with automatic signals as fast as practicable.

Typical Installations in Big Program

In 1921 the absolute staff system, which had been in service over the Cascade mountains since 1910, was replaced by automatic block signals, thus providing a more flexible signal system with more complete protection at a reduced operating cost. In 1922, 165 miles of road from Whitefish, Mont., to Stryker; from Rexford, Mont., to Troy, and from Bonners Ferry, Ida., to Newport, Wash., was signaled with semaphores. Starting in 1923 three-color light signals have been used with the exception of a few short sections of semaphores which were installed to close up gaps on divisions otherwise equipped with sema-

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phore signals. In 1923 color-light signals were installed on 409 track miles and the following year on 202 miles. The 1925 schedule includes 300 miles of color-light signals and 50 miles of semaphore signals. The program authorized for 1926 calls for 350 miles of color-light signals, which, when finished, will complete the signaling of the main line from St. Paul to the Pacific coast.

In progressing with this signaling program the mountain mileage was equipped first, attention being given next to those other divisions which involved the heavier grades and curvature. The mileage and dates of different installations are shown in the accompanying table.

Extensive Application of Remote Control Switches, and Automatic Interlockers

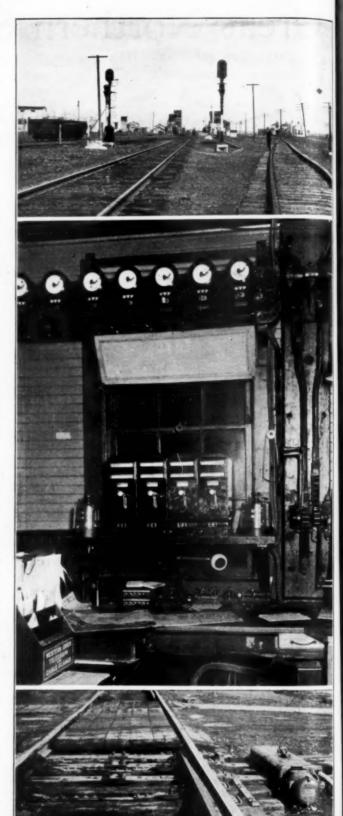
The Great Northern has been one of the pioneer roads in the use of low-voltage remote control switch machines for the operation of passing track and junction switches, and was the first road to make extensive use of automatic interlockings for the protection of train movements at crossings and gauntlets. This road has low-voltage remote control interlockings in service at many points where a decided improvement in train operation is accomplished by the elimination of train stops formerly necessitated. For example, at Cut Bank, Mont., the switches for a short stretch of single track over a bridge are controlled remotely by the operator at the station, thus eliminating train stops and the necessity for switch tenders. At Shelby, Mont., the switches at the end of double track, the junction of the line to Great Falls, and two crossovers, together with proper signal protection, are all handled by the operator at the station by means of a remote control layout. A similar plant is being built at Pacific Jct., near Havre, Mont.

One of the earlier interesting installations of automatic interlockings was made during 1914 at Hanover, Mont., where the single track lines of the Great Northern and the Chicago, Milwaukee & St. Paul run gauntlet over a bridge. This gauntlet is protected by normal danger absolute stop signals which clear automatically when a train approaches in either direction on either road, providing no conflicting train movement is being made. Two other such installations were made in 1923, one at a gauntlet bridge and one at a gauntlet of double track through a snow-shed. A little later a similar automatic interlocking was installed at Arlington, S. D., for the protection of train movements at a crossing with the Chicago & North Western. This plant is operating satisfactorily to eliminate train stops without the cost of operators. The 1926 program includes the replacement of five mechanical interlockings at grade crossings by automatic interlockings which will save an average of \$6,000 each per year. This program also includes two low-voltage interlockings, one at Surrey, N. D., and the other at Minot, N. D.

The Signal Construction Organization Installs Four Miles a Day

Construction and maintenance programs on the Great Northern are arranged so that no work train service is required after September 1, except in special or emergency cases. Signal construction is also arranged on a schedule which permits the new signals to be in service by September 1, in order that they shall be of benefit during the heavy traffic period of the year. To meet this date of completion and yet handle the work economically the Great Northern has evolved an efficient signal construction force that can install from 400 to 600 miles of signals each year at an average rate of four miles a day.

Prompt delivery of materials is essential to a successful signal construction program; therefore the Great North-



Home Signal, Remote Control; Interlocking Interior of Office, Shelby, Mont.; Remote Control Switch Machine

1925

ern prepares plans and requisitions eight months ahead of work schedules. For example, bids for the materials required on the 360 miles of signaling to be installed in 1926 were received in July of this year. Such a program allows the manufacturer to build the apparatus through the fall and winter in slack times, which should result in a closer price to the railroad. All materials are thus available for delivery in the early spring. The pre-cast concrete foundations and battery wells are distributed in February, while the relay cases and other shop work are completed and ready for active work in the field as soon as the frost is out of the ground and weather is moderate enough to permit of efficient outdoor work.

The field forces include one general foreman, one assistant supervisor of signal construction, five assistant general foremen, eight foremen and approximately 150 men. These forces are organized in seven crews, each provided with living cars and tool cars. Six of the crews are furnished with kitchen and dining cars, board being furnished by the commissary department at the rate of \$1 a day.

Sufficient transportation in the form of hand and motor

local way freght train, the speed of which is reduced to about 15 miles an hour. The steel pins and glass insulators are unloaded at stations and distributed on motor cars as the work progresses. Four men and four helpers place the cross-arms, complete with pins and insulators, on the poles. Three signalmen and six helpers string and tie in the line wires.

Crew No. 3, the track crew, includes 12 men and one foreman, who was formerly a section foreman. This crew installs all insulated rail joints, insulated switch rods, switch boxes, rods and switch feet and drills and bonds the joints through road crossings where it is necessary to take up crossing planks. Eight of these men work on the insulated joints and rods, while the others do the remainder of the work, each group having a gang car.

The next crew to arrive on the job is crew No. 4, which distributes the foundations, battery walls and battery boxes with the first work train. Pre-cast signal foundations are used and the foundations, battery wells and battery boxes are loaded on flat cars by the manufacturer, according to a list that permits unloading the cars in proper sequence. A long-boom bridge crane is used for unload-







Distribution Train

A Westbound Head-Block

Portable Crane

cars is provided so that there is no unnecessary delay in going to and from work. Eight gang cars and six side hung light cars constitute the motor car equipment for the forces. Motor cars are maintained, oiled and filled by the cook's helper, thus eliminating any loss of time to an entire crew in working hours on this account.

Progressive Schedule Eliminates Confusion

Each crew has certain work to perform and is advanced over a division on schedule in order to keep enough space between crews to prevent confusion in the work or interference in the operations. The headquarters crew, crew No. 1, consists of one assistant general foreman, one foreman and 14 men. This crew is located at a central point on a section of about 300 miles throughout the period of construction. The work of this crew includes the handling of all materials, the wiring of signal and relay cases in the field and all office work. The remainder of the crews progress over the division and their personnel and duties will be outlined in the order of the construction program.

Crew No. 2, the line crew, handles all pole line work, including the installation of a new cross-arm on every pole, the stringing of line wires and the guying of every pole where cables are to be used. The cross-arms are distributed by a force of four men from a car hauled in a

ing the wells and foundations. On an average 35 miles of line is covered in a day by the work train on this work. A special portable derrick is used for setting the wells and signal foundations later.

On the next work train the signal cases, signal poles, light signal heads, ladders, etc., are distributed. The relay cases used on the pole line side are wired at headquarters and marked for each location. Eight such cases are set near the middle of a flat car. The signal heads are assembled with masts, four being laid on ties on each end of the car. On the arrival of the work train at a location the relay case is set and poles erected by the crane. The ladders and platforms are left at the location to be erected later. This work of erecting signals can be erected later. handled by the work train and signal crew at the rate of 40 miles a day, in some instances a location being completed in a train stop of four minutes. Having completed the distribution the crew then goes back to set up the ladders and platforms, set the chutes and boxes and relay boxes at cut sections. As may be seen in one of the pictures the lower ladder clamp about the pole serves also as a cable messenger clamp.

This crew also insulates the galvanized sheet-iron fire protection sheeting on bridges by cutting the sheet metal in the middle and bending the edges up over a triangular, wooden parting strip placed on top of the ties. One

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assistant general foreman, one foreman and 17 men are assigned to this crew, one gang car and one small car

being provided for their transportation. The drilling, bonding and trunking, handled by crew No. 4 is performed next. An assistant general foreman, two foremen and 25 men are included in this group, being provided with two gang cars and one smaller car. drilling and bonding is handled by one foreman, four drillers, five bonders and one man to distribute and bend the wires. Four Everett power drilling machines, drilling two 3/8 in. holes per joint, cover an average of four miles The drilling is handled in one-mile units with one each rail. On heavy mountain grades the rail is man on each rail. 130 lb.; at other places 100 lb. rail is standard. No rail in main tracks is lighter than 90 lb. Two No. 8 Armco galvanized iron bond wires are used per joint with duplex channel pins. Four pound, long handled hammers are used by the bonders to sink the pins well in the rail. Frogs are bonded with cable bonds, and this type of construc-

and 23 men, their work being divided into separate and distinct duties. One gang car, two small cars and several speeders are provided for this crew. Two men make and hang the line cables, two make the line taps, two men mix up the primary battery and set in the storage cells, and eight men run the track wires, fit and adjust the signal heads. These 14 men work close together, either at the same or adjacent locations, motor cars being used to advantage to distribute materials and transport men from one location to another so as to keep each man busy on his own job. A wireman and his helper follow up to connect the relay end of the cables, wire the battery wells and connect the wires in the signal heads. Two men from the crew wire the train order signals at stations. The last men on this crew are the painter and his helper. Locomotive black paint, No. 20, has been found to give excellent service, holding its color and protecting signal parts for at least three years.

The filling and grading is done by crew No. 6, consist-

CREAT	NORTHERN	SIGNALS-MAIN	LINE

GREAT NO	KIHEKN	SIGNALS—MAIN	LILAND			
	Date	M21	Miles	Total	Number	r of Signals
Location	Service	Miles Single Track	Double Track	Miles of Track	Sema.	Light
St. Paul, Minn., to Minneapolis	1907		10.0	20.0	46	****
Allouez, Wis., to Arlberg		4.0	51.7	107.4	9.0	****
Brookston, Minn., to Congo			4.4	8.8	89	****
Wawina, Minn., to Swan River			4.4	8.8	4.4	
Everett, Wash., to Meetum			24.2	48.4		
G. N. Dock, Seattle to North Portal Tunnel	1910		3.0	6.0	63	
Minneapolis to Long Lake			12.0	24.0	28	
Congo, Minn., to Wawina			26.2	52.4	40	****
Minot, N. D., to Williston		121.1		121.1	. 184	
Everett, Wash., to Bellingham	1913	58.3		58.3	111	****
Cedar Lake Yard, Minneapolis	1914		3.0	6.0	6	
Duluth Trestle, Minn	1915	2.2		2.2	12	
Seattle Tunnel	1916		1.0	2.0	4	
Troy, Mont., to Bonners Ferry, Ida	1918	31.0		31.0	53	****
Stryker, Mont., to Rexford	1918	31.0		31.0	67	
Essex, Mont., to Columbia Falls	1918	43.0	****	43.0	80	
Blackfoot, Mont., to Summit	1918	34.0		34.0	74	
Long Lake, Minn., to Delano	1918		11.0	22.0	17	
Skykomish, Wash., to Everett	1919	53.0		53.0	90	****
Wenatchee, Wash., to Leavenworth	1919	24.0		24.0	48	
Hillyard, Wash., to Newport	1919	43.0		43.0	85	
Hillyard, Wash., to O. W. R. R. & N. Jct	1919	****	6.0	12.0	17	****
Leavenworth, Wash., to Skykomish	1921	58.0	****	58.0	100	11
Bonners Ferry, Ida., to Newport, Wash	1922	61.0		61.0	94	
Rexford, Mont., to Troy	1922	. 72.0	****	72.0	125	
Whitefish, Mont., to Stryker	1922	32.0	****	32.0	9	****
Wenatchee Yd., Washington	1922	4.0		4.0		****
Hillyard, Wash., to Dean	1922	****	12.0	24.0	2	****
North End to Allouez Ore Dock	1922	****			3	****
Calumet, Minn., to Halman Statt	1922	7.0	* * * *	7.0	8	* * * *
Delano, Minn., to Lurgan, N. D	1923	149.1	34.6	218.3	٥	339
Wheelock, N. D., to Springbrook	1923		10.9	21.8	21	
Java, Mont., to Nyack	1923		19.9	39.8	45	****
Ft. Wright, Wash., to Wenatchee	1923	146.6	22.5	191.6		308
Delta, Wash., to Marysville	1923	2.1		2.1	8	308
	1924		1.66	3.32		****
Staples, Minn., to Clearwater	1924	188.97	13.66	216.29	2	202
Wolf Point. Mont., to Havre	1925	106.78		106.78	* *	292
Williston, N. D., to Wolf Point, Mont	1925	100.78	54.57		2.0	200
Havre, Mont., to Blackfoot	1925			209.79	31	225
Summit, Mont., to Java	1925		14.32	28.64	22	****
Columbia Falls, Mont., to Whitefish	1923	****	7.64	15.28	10	****
		1,372.80	348.65	2,070.09	1,015	1,381

tion is also used for track shunt connections to switch boxes, double groove trunking being nailed flat against the side of the head-block ties to carry these cables.

The trunking gang, 14 men and one foreman, are a part of crew No. 4, being provided with a gang car. The trunking is distributed from the local way freight, 28 miles being handled with a delay of only two hours to the train. Cedar stakes and red cedar trunking are used, no paint being applied, it being the experience of the Great Northern that trunking will last longer without paint on account of the paint tending to hold the moisture inside the wood and promote decay. After completing the trunking of a location this crew levels up the signals and chucks up all spaces around the trunking and under the edge of the case with pitch.

Having arrived at this stage of construction crew No. 5, known as the wire crew, then completes the installation with the exception of testing and grading. This crew consists of one assistant general foreman, one foreman

ing of one foreman and 12 men. The testing inspector and one helper test out all circuits, connect up the battery and align the lights. These men have a small motor car. The signals are then placed in service in units of about 20-mile sections.

An interlocking crew consisting of an assistant general foreman and eight men form a part of the signal construction forces and report to the general foreman. This crew installs the low-voltage remote control interlocking and automatic interlocking coming within the limits of new signaling construction. The erecting of special cantilever bridges and other special construction is also performed by this crew.

Methods of Control and Power Supply

Up to the close of 1922 absolute permissive block signaling circuits were used on all single track lines. During 1923-24-25 the system of circuit control is one developed by the Great Northern Railway. On all con5

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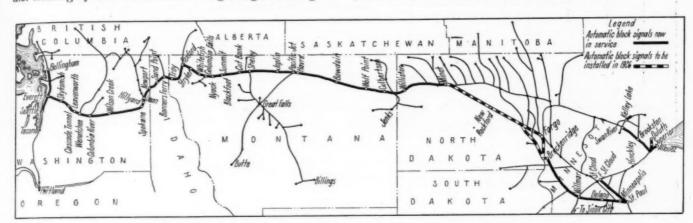
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struction since 1922 an 8-volt 80 a.h. storage battery charged by 14 cells of primary is used for power supply at each signal location. At a town where a.c. power is available a 110 or 220-volt feed circuit is extended 10 or 12 miles in each direction, in which territory the a.c. floating system is used to charge the storage batteries. At the present time the Great Northern has under construction at Culbertson, Mont., an a.c. generating station of 3 K.V.A. capacity driven by a large windmill. It is expected this "windjammer" will furnish current for the a.c. floating system on 28 miles of light signals being in-

by a signal supervisor who reports to and is on the staff of the general superintendent of that district. On most of the divisions with heavier signaling, assistant supervisors are employed, otherwise the maintainers report directly to the supervisor. In case of train delays on account of signal interruptions the dispatcher calls the maintainer and through his division superintendent reports to the superintendent of signals at St. Paul the details of the causes. By this means the superintendent of signals has information each morning showing signal performance for the preceding 24 hours for the system.



Map of Great Northern Showing Portions of Main Line Equipped with Automatic Block Signals

stalled between Wolf Point, Mont., and Williston, N. D. The signal lamps controlled by approach circuits operate from the same battery. Semaphore signals are normally clear and all signal lights are controlled from approach circuits.

Starting with the 1925 construction a 5-watt, 8-volt lamp is used in light signals, equipped with the Lebby lens. Results from signals now in service with this new Lebby lens are quite satisfactory, and plans are being made to replace the lens combinations used in the light signals installed since 1922. This change will permit a 50 per cent reduction in the battery consumption, for the earlier lens requires an 8-volt, 10-watt lamp.

Most of the signal and interlocking apparatus on the Great Northern was purchased from the General Railway Signal Company, Rochester, N. Y. The Great Northern uses the Signal Section, A. R. A. specifications and standards, carefully checking all apparatus and supplies delivered before the signaling is installed. The field forces are provided with plans in detail for both construction and maintenance service, thereby insuring uniformity throughout the system.

Standards for Locations of Signals

The Great Northern has carried out an ideal in the location of its signals with reference to the tracks; all signals are located on the right of and adjacent to the track governed. In many cases side tracks have been thrown over to provide 18-ft. centers to allow proper clearances, and in some cases cantilever bridges are installed. The adherence to this policy has been an important factor in eliminating confusion between signal indications on the part of enginemen. New signals are located to provide a braking distance of 6,000 ft. and in the territory being equipped with train control between Minot, N. D., and Williston, the signals have been relocated to give this standard braking distance.

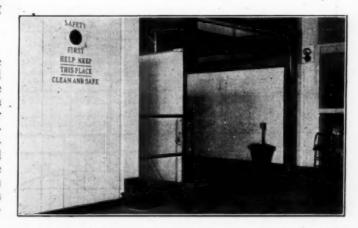
An Outline of the Maintenance Organization

The maintenance of signaling on each operating district, including 2,000 to 3,000 miles of line, is directed

The superintendent of signals reports to the vice-president of operation.

For the information contained in this article we are indebted to L. T. Harris, general foreman of signal construction; Earl M. Bock, assistant supervisor of signal construction, and H. E. Brashares, assistant superintendent of signals. The design, construction and maintenance of the signaling is under the jurisdiction of C. A. Dunham, superintendent of signals.

THE IMPORTANCE of forest industries as a factor in the development of Canadian commerce is shown by the increase in the Dominion's export of pulp paper and lumber products from \$42,000,000 in 1903 to \$274,000,000 in the year ended March, 1924. It is estimated by government statisticians that approximately one-quarter (600,000,000 acres) of the total land area in the Dominion is covered by forest growth.



The Bessemer & Lake Erie Has Adopted a Standard "Safety First" Warning—Interior View of the Storehouse at Greenville, Pa., Showing an Elevator Door and Protected Stairway

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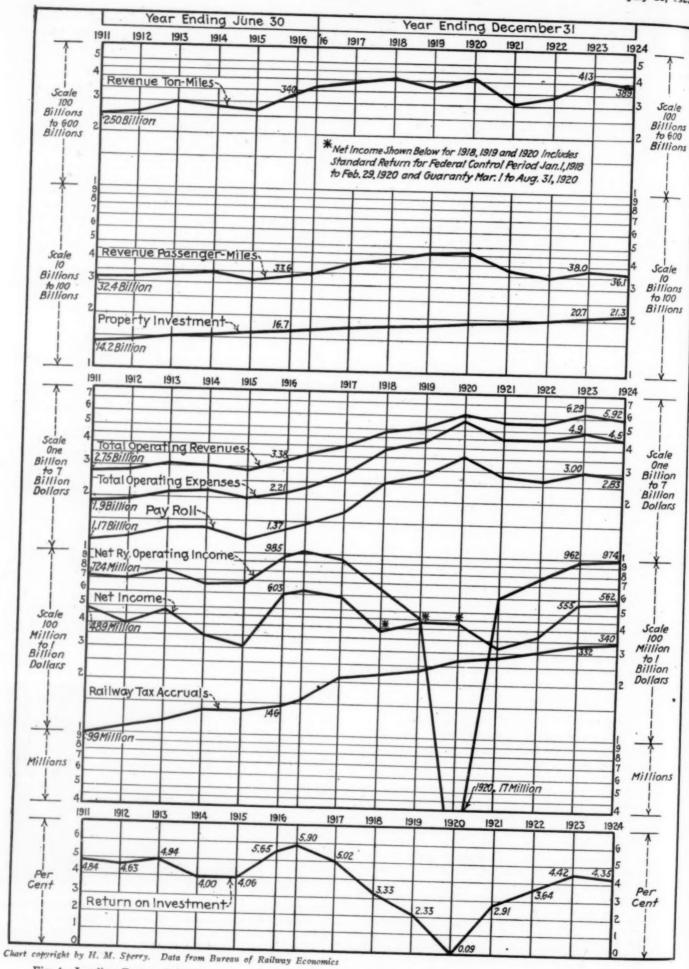


Fig. 1-Leading Factors in Railway Earnings Plotted on a Ratio Scale, for Clearer Comprehension of Relationship

The Trend of Railway Earnings Shown in Charts

Including an interesting tabular and graphic comparison with the pre-war rates, traffic and net operating income by regions

By Henry M. Sperry, M. Am. Soc. C. E.

VIGURES dealing with railway traffic and earnings are so large, and there are so many of them that it is always difficult to present them in a manner that will permit ready comprehension of their relation-This refers not only to the comparison of one unit with another in the same period but also to the trend of the figures relating to each unit year by year, and to the true picturing of the general situation as shown by all the varying trends as the figures change with the changing fortunes of the railway industry. There are presented with this article three charts, one of which it is believed shows readily and clearly the trends of the railways as a whole, and the other two amplify the picture to show the changing situation, which has taken place since the war, in the several regions into which the country's railroads are now divided.

Complete Picture on Single Page

Fig. 1 shows in the space of but a single page a complete picture of the railway situation of this country for the past 141/2 years beginning with the fiscal year ended June 30, 1911, the first year in which figures for the Class I carriers as such were compiled or totaled. The feature of the chart is that, although no less than ten curves are shown, in only four places does one curve cross another—namely, as a result of conditions in 1920 when net railway operating income was so low as nearly to approach the vanishing point. This result is obtained by using the semi-logarithmic or ratio scale whereby nine of the curves are shown in small space in spite of the fact that there are plotted amounts varying between less than 100 million on the one hand and exceeding 400 billion on the other. Besides this, the use of the ratio scale assists in presenting the true relationship between the figures. An increase or decrease of a given percentage in any item on the chart will show the same degree of upward or downward inclination regardless of the magnitude of the item or its position on the chart. If the ordinary arithmetical scale were used the fluctuation in the large items-could they be put upon the chart at all-would be more pronounced than and entirely out of proportion to the same relative fluctuations in the smaller items.

The chart is in three parts. The upper part—comprehending a measure between 10 billions and 600 billions—shows the revenue ton-miles, the revenue passenger-miles and the investment in road and equipment as shown by the carriers' book accounts, exclusive of materials and supplies and cash. The second part—comprehending a scale between 40 millions and 8 billions—contains the curves of total operating revenues, total operating expenses, the pay roll, the net railway operating income or net after equipment and joint facility rents, the net income available for dividends after interest and other fixed charges, and the taxes. The curve of net income includes

the standard return received by the railway corporations for the operation of their properties by the Railroad Administration during the period of federal control, and the guaranty for the so-called guaranty period from March I, to August 31, 1920, which standard return and guaranty were paid not entirely from the railways' own operation but largely out of the national treasury. The third part of the chart shows the rate of return or ratio that net railway operating income bears to the property investment, inclusive of materials and supplies and cash.

What the Chart Shows:

The chart shows, among other things, the increase in traffic prior to and during the war, the disproportionate increase in expenses, notably in the payroll, and the resulting decrease in net railway operating income, which fell so low in 1920 as to disappear below the bottom line of the chart. There is then apparent the recovery in railway earning power since the war, although it will be seen that the rate of return has in no year since the war equalled the 534 per cent that the Interstate Commerce Commission has determined to be a reasonable rate of return. In fact, the rate of return for 1923 and 1924 is seen to be less than in all but two of the years prior to 1917. Particularly striking is the substantial and steady increase in taxes to that point where they now approxi-

Table I—The Changing Relationships in the Railway Figures
Indicated in Per Cents—Class I Railways

				Per cent Increase		
1911*	1916*	1923†	1924†	1923 over 1916	1924 over 1916	
250	340	413	389	21.5	14.4	
32.4	33.6	38.0	36.1	13.1	7.4	
14.2	16.7	20.7	21.3	24.0	27.5	
2.75	3.38	6.29	5.92	86.1	75.1	
1.90	2.21	4.90	4.51	121.7	104.1	
1.17	1.37	3.00	2.83	119.0	106.6	
724	985	962	974	D 2.3	D 1.1	
489	603	555	562	D 8.0	D 6.8	
99	146	332	340	127.4	132.9	
	250 32.4 14.2 2.75 1.90 1.17	250 340 32.4 33.6 14.2 16.7 2.75 3.38 1.90 2.21 1.17 1.37 724 985 489 603	250 340 413 32.4 33.6 38.0 14.2 16.7 20.7 2.75 3.38 6.29 1.90 2.21 4.90 1.17 1.37 3.00 724 985 962 489 603 555	250 340 413 389 32.4 33.6 38.0 36.1 14.2 16.7 20.7 21.3 2.75 3.38 6.29 5.92 1.90 2.21 4.90 4.51 1.17 1.37 3.00 2.83 724 985 962 974 489 603 555 562	1911* 1916* 1923† 1924† 1916* 1923† 1924† 1916* 1923† 1924† 1916*	

*Fiscal year ended June 30. †Calendar year ended December 31.

mate a million dollars a day and are nearly $3\frac{1}{2}$ times what they were in 1911. In no year is a decrease in railway taxes indicated.

Comparison by Regions

In 1923, the rate of return that the Class I railroads, including large switching and terminal companies, earned on their property investment, inclusive of materials and supplies and cash, was 4.48 per cent and in 1924, 4.33 per cent. The showing by regions has been

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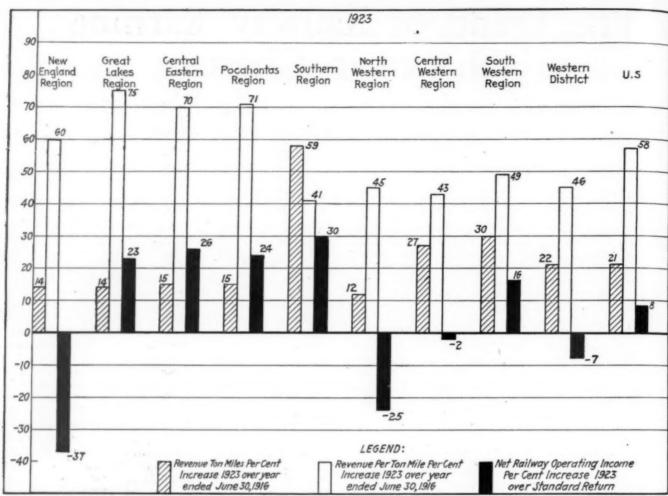
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Fig. 2-Comparison by Regions, 1923

indicated by the Bureau of Railway Economics to be as follows:

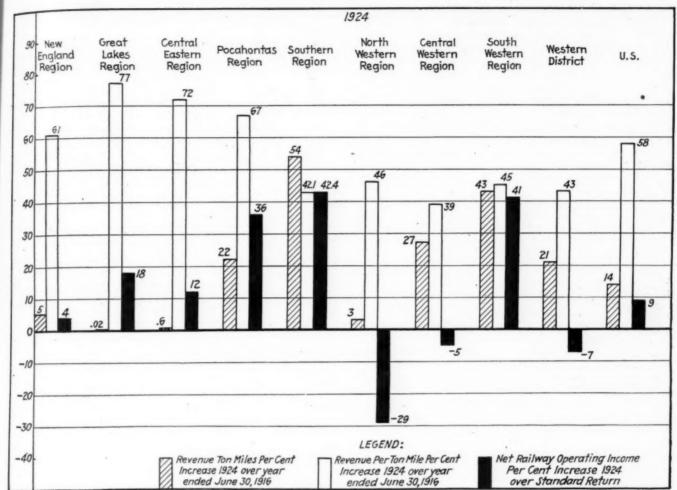
	Rate of return		
	1924	1923	
New England Region	3.74 4.84 4.17 6.03 5.20	2.32 5.30 4.85 5.73 5.02	
Northwestern Region	3,12 4,21 4,34 3,87	3.45 4.50 3.65 3.96	
Total United States	4 33	4.48	

Much has been said concerning the poor showing of the carriers in the western district and in the northwestern region in particular. That the earnings of these carriers have not been good is clearly indicated by the figures showing the rate of return. Thus, the carriers in the western district as a whole earned at a rate of only 3.87 per cent on their property investment in 1924 and of 3.96 in 1923, while the roads in the northwestern region in particular had a rate of return of but 3.12 in 1924 and of 3.45 in 1923.

The attempt has been made to bring out this situation more pointedly by means of a comparison with the situation as it existed prior to the war. To effect this comparison readily in graphic form, Figs. 2 and 3 have been prepared. These charts show the figures for 1923 in Fig. 2 and the figures for 1924 in Fig. 3, in percentages of increase over pre-war figures. Thus, there are shown for each region comparisons of revenue ton-miles, of revenue per ton per mile, and of net railway operating income.

The revenue ton-miles and revenue per ton per mile for 1923 (Fig. 2) and for 1924 (Fig. 3) are compared and shown in percentages of increase over those for the year ended June 30, 1916, which year was selected because it was the middle year of the so-called "test-period." The net railway operating income is shown as a percentage of increase over or decrease from the standard return for operations during federal control, which was the average annual net railway operating income for the three years ended June 30, 1917, which is the best index of pre-war net earnings that is available or could possibly be desired. The adverse situation in the northwestern region is made particularly striking in these two charts. In 1923, for instance, there is shown an increase in the revenue per ton per mile over the year ended June 30, 1916, of but 45 per cent as against 75 per cent increase in the Great Lake region, 71 in the Pocahontas or 58 per cent in the country as a whole. This increase in the rate level was not sufficient to meet the increased costs of railway operation existing since the war as a result of which the net railway operating income of the region was 25 per cent less than the region's standard return. It is true that the southern region had an increase in its revenue per ton per mile of but 41 per cent, but so great was the region's increase in traffic over that for the year ended June 30. 1916-59 per cent-that the net operating income in 1923 was 30 per cent in excess of the region's standard return. The picture is even more clear in Fig. 3 where comparisons for 1924 are given. In this case, the northwestern region increase in revenue per ton per mile as compared with 1916 is seen to be 46 per cent, as compared with 77

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Fig. 3-Comparison by Regions, 1924

per cent in the Great Lakes region, 67 per cent in the Pocahontas, 58 per cent in the country as a whole, etc. The net railway operating income is seen to be 29 per cent less than the standard return, that for the central western region 5 per cent less, and for the western district as a whole 7 per cent less. Comparatively small increases in the rate level in the southern region or in the southwestern region are seen to be compensated for by very substantial increases in traffic and these regions

show the greatest increases in net railway operating income over the standard return.

First Attempt to Analyze Regional Changes

These charts enter into a subject which, to the best of the writer's knowledge and belief, no one has hitherto attempted to analyze. Such discussion as has hitherto taken place has dealt either with the eastern, southern and western districts as a whole or with roads individually. The

Table II-Comparison by Regions

Net railway operating income for 1923 and 1924 shown in percentage of standard return. Revenue ton-miles and revenue per ton-mile shown in percentages of figures for year ended June 30, 1916.

	New England Region		Central Eastern Region	Pocahontas n Region	Southern Region	Northwestern Region	Central Western Region	Southwestern Region	Total Western District	United States
Standard return	34,427,281	155,675,389	173,406,821	38,613,355	100,079,148	148,734,272	190,977,563	64,980,916	404,692,751	906,894,745
1923—Net ry, operating income % of Standard return 1924—Net ry, operating in-		192,094,769 123.39	217,847,961 125.63	47,696,463 123.52	129,764,446 129.66	112,236,458 75.46	186,641,828 97.73	75,678,178 116.46	374,556,464 92.55	983,736,225 108.47
come % of Standard return	35,727,730	183,333,460 117.76	194,912,571 112,40	52,525,674 136.03	142,552,991 142,44	104,873,704 70.51	181,262.509 94.91	91,944,778 141.50	378,080,991 93.42	987,133,417 166.85
1916—Revenue ton-miles 1923—Revenue ton-miles % of 1916 1924—Revenue ton-miles % of 1916	10,730,539 113.85	69,840,858 79,567,058 113.93 69,857,780 100.02	103,976,381 115.39	24,266,841 27,788,016 114.51 29,687,525 122.34	34,201,622 54,274,919 158.69 52,720,468 I54.15	45,017,216 50,255,257 111.64 46,394,281 103.06	46,170,657 58,816,114 127.39 58,740,071 127.22	28,070,727 129.61	112,846,134 137,142,098 121.53 136,082,649 120.59	340,689,980 413,479,011 121.37 388,872,920 114.14
1916—Rev. per ton per mile, cents	1.101	0.624	0.617	0.402	0.776	0.778	0.882	0.891	0.843	0.707
cents	1.763 160.13	1.090 174.68	1.050 170.18	0.686 170.65	1.093 140.85	1.131 145.37	1.262 143.08	1.329 149.15	1.228 145.67	1.116 157.85
1924—Rev. per ton per mile, cents % of 1916		1.107 177.40	1.064 172.44	0.672 167.16	1.103 142.14	1.137 146.14	1.223 138.66	1.293 145.11	1,209 143.41	1.116 157.85

[Note-Standard return and net railway operating income figures include switching and terminal companies.]

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charts go beyond previous treatments of the subject in treating of the regions and in particular they indicate the adverse situation in the northwestern region pointedly. It will be understood that much statistical compilation was necessary to permit the comparisons by regions, It was necessary in particular to recast the totals for the several regions for the year ended June 30, 1916, and for the test period. The figures were not compiled by regions at that time, as a result of which it was made necessary to take the basic data for the individual roads and to construct the regions as they exist today. It should be noted that the figures of net railway operating income reproduced in percentage form in the two charts include switching and terminal companies whereas the figures of

Nickel Plate Hearing Resumed

THE hearing on the Nickel Plate unification plan before Commissioner Meyer of the Interstale Commerce Commission and Director Mahaffie of the commission's Bureau of Finance was resumed on July 20 after an adjournment for three weeks pending a decision by the commission as to whether O. P. Vall Sweringen should be cross-examined by W. H. Anderson. counsel for protesting stockholders of the Chesapeake & Ohio, as to details of the Van Sweringen real estate transactions in connection with and preceding the organization of the Cleveland Union Terminals Company, prior

Table III-Statistics of Class I Railways in the United States

RAILWAYS HAVING ANNUAL OPERATING REVENUES ABOVE \$1,000,000-EXCLUDES SWITCHING AND TERMINAL COMPANIES

	Year ended December 31							
Item .	June 30, 191		1921	1922	1923	1924		
Miles of road operated	\$16,688,440,056 . 295,855,784	234,668 \$19,061,239,186 755,563,278 369,421,765	234,419 \$19,578,545,638 665,147,099 418,265,549	234,825 \$19,871,241,404 546,284,853 483,717,274	235,185 \$20,657,166,329 682,725,812 407,339,592	235,854 a\$21,323,000,000 588,487,593 512,736,299		
and cash	\$17,418,393,830	\$20,186,224,229	\$20,661,958,286	\$20,901,243,531	\$21,747,231,733	\$22,424,223,892		
Freight revenue Passenger revenue Total operating revenues.	675,216,483	4,328,297,621 1,288,503,573 \$6,178,438,459	3,924,119,819 1,153,791,925 \$5,516,598,242	4,005,558,722 1,075,936,844 \$5,559,092,708	4,622,364,989 1,147,588,884 \$6,289,580,027	4,346,301,262 1,076,580,057 \$5,922,627,820		
Maintenance of way expenses. Maintenance of equipment expenses. Transportation expenses Total operating expenses.	557,664,332 1,090,100,194 \$2,210,892,786	1,032,540,381 1,590,364,640 2,904,086,435 \$5,827,591,146	756,413,690 1,251,479,443 2,262,471,848 \$4,562,668,302	728,663,534 1,252,517,250 2,149,763,823 \$4,414,522,334	813,688,760 1,465,156,595 2,321,283,138 \$4,895,166,819	792,849,311 1,260,183,088 2,152,445,851 \$4,508,583,787		
Operating ratio	65.38	94.32	82.71	79.41	77.83	76.12		
Net operating revenue. Railway tax accruals. Railway operating income. Net railway operating income.	145,517,034	\$350,847,313 272,061,453 77,474,243 \$17,226,902	\$953,929,940 275,875,990 676,213,087 \$600,937,356	\$1,144,570,374 301,034,923 842,072,928 \$760,187,319	\$1,394,413,208 331,915,459 1,060,556,091 \$961,955,457	\$1,414,044,033 340,055,097 1,071,682,829 \$974,346,443		
Rate of return on investment, including materials and supplies and cash	5.65	0.09	2.91	3.64		,,,		
Other income (including miscellaneous operating income) Gross income Interest, rents for leased roads and other deductions from	\$192,709,534 1,177,582,493	\$1,053,807,031 1,071,033,933	\$375,000,544 975,937,900	\$265,032,855 1,025,220,174	\$260,655,476 1,222,610,933	4.35 \$261,056,736 1,235,403,179		
Ret income available for dividends	574,359,600 \$603,222,893	640,515,977 \$430,517,956	662,375,138 \$313,562,762	655,646,742 \$369,573,432	667,615,629 \$554,995,304	673,600,712 \$561,802,467		
Dividends declared from income	184,044,513 97,891,858 281,936,371	180,018,747 91,712,922 271,731,669	182,433,297 218,298,581* 400,731,878*		195,029,636 151,514,812† 346,544,448†	310,221,064		
Revenue ton-miles Kevenue per ton-mile.	0.707		306,840,203,512 1.275		412,727,228,412	388,872,920,000		
Revenue per passenger mile	33,645,908,150 2.002	46,848,667,987 2.745	37,312,585,966 3.086	35,469,961,582 3.027	37,956,594,827 3.018	36,125,685,000 2.978		
Aggregate compensation of employees	\$1,366,100,518	\$3,681,801,193	\$2,765,218,079	\$2,640,817,005	\$3,004,071,882	\$2,827,851,363		

cludes stock dividend declared by Delaware, Lackawanna & Western of \$42,220,550, and stock dividend declared by Chicago, Burlington & of \$60,000,000.

Quincy of \$60,000,000.

†Includes stock dividend declared by Louisville & Nashville of \$45,000,000, and stock dividend obligation declared by Richmond, Fredericksburg & Potomac of \$5,*17,400.

**Potomac of \$5,*17,400.

**Potom

revenue ton-miles and revenue per ton per mile do not. A slight complication was offered because the official figures for 1923 and 1924 are compiled in such a manner as to include the revenue ton-miles of the Boston & Albany in the New England region but not the net railway operating income of that carrier, which is reported with that of the New York Central, the lessor company, and therefore in the Great Lakes region. Computation of the percentages was made accordingly. In this connection, one should notice the marked improvement in the New England region in 1924 as compared with 1923.

RAPID PROGRESS is being made in Quebec and other provinces of the Dominion in harnessing the undeveloped water powers and the rapid expansion of this work in recent years has placed Canada among the foremost nations of the world in the matter of developed hydro power. Within the last four years there has been a 40 per cent increase in water power production in Quebec, more than 50 per cent in Ontario, and 25 per cent in British Columbia. The present development is equivalent to that which would be secured from \$300,000,000 worth of coal in a year.

to their acquisition of the New York, Chicago & St. Louis. A formal ruling was made unnecessary because counsel for Mr. Van Sweringen during the recess had filed with the commission and counsel the answer to the first of the series of questions objected to, in the form of a list of the stockholders of the Cleveland Terminal Properties Company, a company organized by the Van Sweringens in 1915 which held securities and land involved in their terminal operations. Commissioner Meyer announced that the commission had decided that the objection to this question should be overruled but that the list had been received before the commission had considered the subject following the arguments on the question on June 25. Counsel for Mr. Van Sweringen, possibly anticipating such a ruling, had apparently changed their attitude and made no further objection to the most detailed questions regarding the real estate transactions nor to furnishing copies of all the agreements and other papers asked for. For the next day and a half the hearing was devoted to questions along this line, although most of the information brought out had been part of the evidence taken by the commission in the Cleveland Union Terminals case

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and Mr. Van Sweringen answered many of the questions put to him by reading from his previous testimony in that

Mr. Anderson had indicated that he expected to show by this line of inquiry an interest on the part of the New York Central in the unification plan and also large profits to accrue to the Van Sweringens from the real estate and merger transactions, and had insisted on his right to inquire into the earlier transactions in an effort to trace the connection with the New York Central. The list of stockholders of the Terminal Properties Company disclosed no such interest, and although the Van Sweringens had had dealings with the New York Central in connection with the union station project and in the acquisition of the Nickel Plate and Lake Erie & Western, nothing was brought out connecting it in any way with the present plan. Mr. Van Sweringen read from the early record how he and his brother had become interested in suburban real estate property near Cleveland and in the construction of a rapid transit railway into the Public Square in that city in order to develop it, how they had acquired a right of way into the square for terminals and on suggestions from several railroads had planned for the construction of a stub-end terminal which might admit the Baltimore & Ohio, Erie and Wheeling & Lake Erie. He said he had met A. H. Smith, late president of the New York Central, in buying some land needed and had bought some land for account of the New York Central for its use for a high level entrance to the city. At Mr. Smith's suggestion and on the report of a board of engineers appointed by the Railroad Administration during federal control the terminal plan had been changed to a through terminal to accommodate the New York Central and other lines and the Cleveland Union Terminals Company had been formed, making contracts for the railroad use of property already acquired by the Van Sweringen interests while the latter reserved the "air rights," or the right to erect buildings above the terminal properties, and also some concession rights and property available for traction terminals. The stock of the Union Terminals Company is owned by the New York Central, Big Four and the Nickel Plate, while the reserved rights and other property are held by Van Sweringen companies, including the Cleveland Terminal Building Company, the Cleveland Traction Terminal Company, the Cleveland & Youngstown Railway, a hotel company and the Vaness company.

Mr. Anderson asked for and counsel for Mr. Van Sweringen either furnished or agreed to furnish copies of agreements and contracts between the companies. He also inquired in detail as to the costs of the lands acquired by the Van Sweringens, saying he wished to show that they would make large profits from the reserved rights while the cost of the lands would be paid by the railroads. Mr. Van Sweringen objected to furnishing the costs in the detail asked for, saying that some of the property has not yet been acquired, although he agreed to furnish much of the information asked, but he said that the cost to the Van Sweringens had no relation to present values because the properties had been acquired over a period of 15 years, much of it at prices much less than present value, and that it had been agreed to give the terminal company an easement over part of the land for a consideration of one dollar and over the other part at actual cost plus carrying charges. Mr. Anderson asked if the 'air rights" had not been valued at \$15,000,000 and if the Van Sweringens had not issued securities to that amount against them. Mr. Van Sweringen declined to estimate the value and while he said a series of securities to that amount had been authorized the amount was intended to cover the proposed buildings.

It was while engaged in the terminal real estate trans-

actions that the Van Sweringens became interested in the Nickel Plate, the stock of which they had purchased from the New York Central in 1916 for \$8,500,000, paying \$2,000,000 in cash and the rest in notes, having raised the cash payment by organizing the Nickel Plate Securities Corporation, to which was assigned their contract to purchase the Nickel Plate stock, and selling stock of the new company issued against the purchase agreement and securities representing the Van Sweringen real estate holdings. Mr. Anderson tried to get Mr. Van Sweringen to admit that they had only invested \$520,000 in cash but he declined to answer the question in the way that Mr. Anderson desired, insisting that the securities used represented considerable in the way of earlier investment.

At one time Commissioner Meyer objected to Mr. Van Sweringen's reading at such length from the earlier record but the witness said that an inference had been introduced into the case that there was some sort of a conspiracy between the Van Sweringens and the New York Central and that he wished to show that it was untrue. It was then agreed that the remainder of the statement should be filed as an exhibit.

On Tuesday afternoon Mr. Anderson dropped the subject of the real estate transactions and returned to his cross-examination of Mr. Van Sweringen on his direct testimony, the questions mainly taking the form of demands for supporting detail figures and papers. He also filed for the record a large mass of documentary matter which had been furnished in response to his previous questions. Mr. Van Sweringen said he had consulted with John E. Oldham regarding the merger plan, both at Cleveland and at the office of J. P. Morgan & Co., and thought he was under a retainer to advise the Morgan company. He had also discussed the plan with the Morgan partners, the Guaranty Trust Company, and with Professor Ripley, saying he had got light and advice wherever he could. He said no commitments had been made for any further purchases of the stocks of the roads involved. Mr. Anderson asked him to file a detailed list of all the stock purchases and the prices, which Mr. Van Sweringen said he would do to the best of his ability.

Another controversy was precipitated by a demand by Mr. Anderson for the presentation of a complete list of the stocks deposited with the committee formed to effect the exchange of securities and also all records and correspondence of the committee. He said the question of who had voted for the plan would become very material and when Commissioner Meyer asked what he expected to show, after W. A. Colston, general counsel for the Nickel Plate, had entered a vigorous objection, Mr. Anderson said that the action of the Van Sweringens and their associates in voting the majority of the stock of the Chesapeake & Ohio in favor of the plan in which they were interested was illegal and void and that if this stock were excluded a majority of the remaining stockholders had voted against the plan. He also said he wanted to know how much of the stock had been borrowed for voting purposes. Mr. Colston said that the information Mr. Anderson said he wanted could be obtained from the records of the Chesapeake & Ohio meetings and that the committee records were not pertinent because the committee is not a party to the proceeding. Mr. Van Sweringen said that no stock had been borrowed and that if it would clear the atmosphere any he would have all the stock held for the interest of himself and brother transferred on the books so as to show its ownership. Mr. Anderson said that what is proposed is not a transportation deal at all but a stock manipulation involving enormous profits and that he desired to inquire into the stock deposits. to show that the plan was never actually authorized. Newton D. Baker, counsel for Mr. Van Sweringen, suggested as a short cut, that information be furnished showing just what stock was owned by the Van Sweringens and their associates without going into the list of small holders and bringing in the 50,000 letters which the records of the committee would include. Commissioner Meyer withheld his decision on the question.

Mr. Anderson asked numerous questions relating to the proposed plan of financing, taking the position that the credit of the Chesapeake & Ohio was to be used to strengthen weaker roads. When he asked Mr. Van Sweringen to state specifically the points on which he considered the proposed unification of advantage to the public the witness said he could only answer in a general way and that more specific statements would be given by later witnesses. He said Congress has decided that railroads should be grouped into a limited number of systems and that this particular grouping is in keeping with the law and a natural alliance because the Chesapeake & Ohio will be materially helped in its outlet and in the marketing of its products and its traffic will be diversified and its eastbound business stimulated. He objected to Mr. Anderson's statement that he was proposing by his control of the Chesapeake & Ohio to take it away from its stockholders and lease it for 999 years to a "paper company," saying that a majority of the C. & O. stock aside from that controlled by the Van Sweringens had assented to the plan.

The testimony in this hearing has already reached over 4,000 pages and nearly 200 exhibits and no end of the hearing itself is yet in prospect, to say nothing of a decision by the commission, only one of whose members has heard the testimony.

Freight Car Loading

REVENUE freight car loading in the week ended July 11 fell below that for several previous weeks. The total was 982,809 cars, which was an increase of 72,826 cars as compared with that of the corresponding period of last year but a decrease of 37,000 cars as compared with 1923. It was also a decrease of 8,532 cars as compared with the week before the week which included the July 4 holiday. Increases as compared with last year were shown in all districts and in all classes of commodities except grain and grain products and livestock, but there were decreases as compared with 1923 in all classes of commodities except merchandise and miscellaneous freight. The latter showed an increase of

37,709 cars as compared with last year and of 28,994 cars as compared with 1923. Coal loading showed an increase of 14,625 cars as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING

WEEK ENDED JULY	11, 1925.		
Districts	1925	1924	1923
Eastern	233,224	212,967	244,042
Aliegheny	199,812	184,301	225,237
Pocahontas	50,225	42,429	44,142
Southern	135,447	128,546	130,566
Northwestern	148,685	137,766	172,731
Central western	145,884	141,100	141,513
Southwestern	69,532	62,874	61,578
Total western districts	364,101	341,740	375,822
Commodities			
Grain and grain products	38,071	41,907	39,491
Live stock	27,588	33,824	32,169
Coal	160,444	146,179	193,922
Coke	9,406	7,140	14,515
Forest products	60,866	. 57,873	71,775
Cre	66,212	59,423	89,087
Mdse., l.c.l	253,142	234,286	240,784
Miscellaneous	367,060	329,351	338,066
Total	982,089	909,983	1,019,809
July 4	864,452	757,904	850,082
June 27	991,341	908,251	1,021,471
June 20	982,600	903,546	1,004,982
June 13	987,196	902,592	1,008,838
Cumulative total, twenty-eight weeks	26,144,889	24,853,039	25,875,393

The freight car surplus for the first week in July showed an increase of 4,077 cars to 311,572 cars, including 112,256 coal cars and 148,315 coal cars. The Canadian roads for the same period had a surplus of 34,960 cars, including 31,250 box cars.

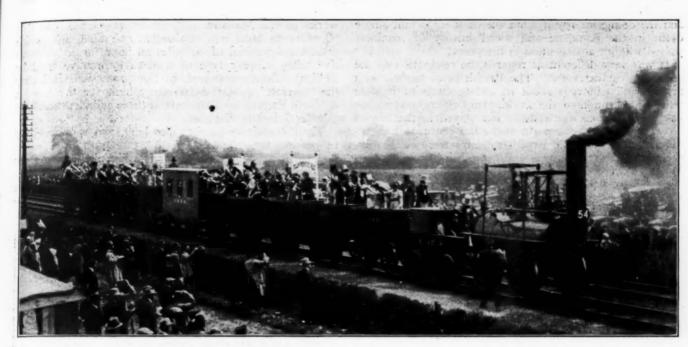
Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended July 11 totaled 51,479 cars, an increase over the previous week of 4,411 cars and a decrease from the same week last year of 1,972 cars. Grain loading was lighter than last year by 932 cars and coal loading was lighter by 3,011 cars. All forest products showed increases and miscellaneous freight was also heavier by 1,182 cars.

	Tota	l for Can		lative	
	July 11,	July 4,	July 12.		to date
Commodities-	1925	1925	1924	1925	1924
Grain and grain products	4,951	5,164	5,883	163,665	229,266
Live stock		2,127	2,043	60,925	60,150
Coal		1,444	5.033	96,653	135,056
Coke	269	256	278	7,676	6,659
Lumber	3,944	3,466	3,861	95,122	100,751
Pulp wood	. 2,442	2,188	1,996	84,481	86,859
Pulp and paper	1,868	1,617	1,806	57,362	56,462
Other forest products	2,850	2,791	2,467	82,431	77,550
Ore	1,415	1,349	1,440	36,149	32,891
Merchandise l. c. l	15,849	13,819	16,073	415,772	394,413
Miscellaneous		12,847	12,571	318,572	318,185
Total cars loaded Total cars received from	51,479	47,068	53,451	1,418,808	1,498,242
connections	29,497	31,547	25,410	916,691	912,744



Built by Grant for the Oregon and Washington Territory Railway



"Locomotion No. 1" and Replica of Original Train Passing Reviewing Stand

British Centenary Celebration

One-hundredth anniversary of beginning of steam railroad transportation observed in interesting and appropriate way

By Samuel O. Dunn Editor of the Railway Age

HERE has just been celebrated in England the centenary of the most important event in the economic history of the world—the real beginning of steam railroad transportation. When, on September 27,



Cottage at Wylam, Near Newcastle-on-Tyne, Where Stephenson Was Born

1925, the first train on the Stockton & Darlington Railroad made its initial trip drawn by George Stephenson's engine, "Locomotion No. 1," the era of steam railroad transportation for the public conveyance of passengers and freight was ushered in. It was the 100th anniversary of this event that has just been celebrated.

Since the celebration was on July 1 to 3, 1925, it began 86 days before the first century of steam railroad transportation actually had expired. It was held in advance of the most appropriate dates for it to make possible the participation of the delegates to the International Railway Congress. They were taken from London to Darlington in four special trains by the London & North Eastern, of which the old Stockton & Darlington is a part, and on July 3 were given a luncheon in the car shops at Darlington which was attended by more than 1,000 persons.

It would be wholly impossible to exaggerate the importance of the event which this centenary celebration was held to commemorate. The operation of the first-steam-drawn train started and made possible a series of changes in communication, production and commerce which have had, in one hundred years, more important effects on the fortunes of the human race, than all the changes in its economic environment and methods that occurred in the previous 10,000 years.

It is a curious and highly significant fact that when this important event occurred it attracted almost no public attention. The London Observer stated on June 28, 1925, that it had searched its own files, those of other newspapers and other records of the year 1825, and had not found any contemporary published account of the operation of the first steam train. The newspapers of 100 years ago were full of articles regarding diplomacy, politics, war

and the doings of royalty, but the most important single event in the economic and social history of mankind passed without any mention in the press!

It was very different as regards the celebration of the centenary of that event. The British press teemed with articles and editorials about it, and accounts of it were published throughout the world. Important, however, as has been the part the railway has played in the life of Great Britain and the world in the last century, it is significant that while the British railways were celebrating their centenary their gross and net earnings were declining, they were face to face with serious labor troubles, their officers were pessimistic about their future, and there was little disposition apparent on the part of business and public men to help them through their difficulties.

Nevertheless, they celebrated the centenary in an appropriate and splendid way, and the celebration must have done much to make the British public realize how wonderful has been, in a very short time, the evolution and development of the railway, and how great has been the part it has played in making the modern world.

The centenary celebration was begun at Darlington on July 1 by the opening by the Duke of York of an "exhibition of items of historical interest in the development of railways" which was held in the Faverdale car shops of the London & North Eastern Railway.

Picturesque Procession of Locomotives

This was followed the next morning by the operation over the old Stockton & Darlington line of the most picturesque procession of locomotives ever brought together. It was led by "Hetton Colliery Locomotive" which was



Hand-Power Wheel Used to Drive Lathe with Which George Stephenson Built His First' Locomotive

built by George Stephenson and Nicholas Wood in 1822, and rebuilt in 1857 and again in 1882, when it was fitted with a link motion; and it included locomotives of every design and for every purpose that had ever been built for the railways of Great Britain. Here, for example, was the famous "North Star" 2-2-2 which was built in 1837 by George Stephenson for a foreign railway of six-foot gage, was subsequently altered to suit Brunel's sevenfoot gage on the Great Western Railway and was op-erated until 1870. Here was the "Cornwall" 2-2-2, a single driver express passenger engine built at the Crewe works of the London & North Western in 1847, and which had driving wehels 8 ft. 6 in. in diameter, the largest driving wheels in the world. Close after it came No. 679, a 4-2-2 passenger engine built at the Derby

works of the Midland in 1889, with which a speed of 90 miles an hour was attained at one time, and which maintained a speed of 80 miles an hour for 13 consecutive miles. Every type of modern locomotive used by British railways appeared in the procession, including the "Garratt" 2-8-0-0-8-2 recently built for the London & North Eastern with two sets of three cylinders and with a boiler 7 feet in diameter.

The procession was six miles long, and was one hour in passing the grand stand. One feature of it was a tableaux train which endeavored in six pictures to show the evolution of the wheel in transport. The procession was concluded by "Locomotion No. 1" hauling a replica of the original train the drawing of which by this loco-



Lathe Head Used by George Stephenson in Building His First Locomotive

motive over the same line 100 years ago introduced the era of steam railroad transportation. The train was preceded, as when originally run, by a man on horseback who went through the motions of warning unwary people to get off the track. It consisted of colliery wagons and a coach. Men representing the original directors of the company sat in the coach, and, as on the first trip, the colliery wagons were crowded with passengers, all wearing high hats and the costumes of a century before. procession attracted a vast crowd estimated at 250,000 people.

The banquet at Darlington on the evening of July 2 had as its chairman Lord Grey of Falloden, formerly foreign minister of Great Britain and a director of the London & North Eastern, and addresses were made by Sir Arthur Francis Pease, Col. Wilfred W. Ashley, the Minister of Transport; the Mayor of Darlington; William Whitelaw, Chairman of the London & North Eastern; and the Archbishop of York.

On July 3 occurred the luncheon given by the London & North Eastern in its car shops at Darlington in honor of the delegates to the International Railway Congress. On behalf of the railwaymen of Italy a beautiful tablet was presented in commemoration of the centenary.

America's Debt to England

An address welcoming the visitors was made by William Whitelaw, Chairman of the London & North Eastern, and responses were made by M. Colson of France, and George A. Harwood, vice-president of the New York Central. In his address Mr. Harwood said:

"It is appropriate that we, the railroad men of all coun-

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tries, should acknowledge our debt and express our gratitude to England and Englishmen, first, for the steam engine which made the railroad possible, and then for the railroad itself. It is indeed a privilege for me, an American, to have this opportunity to express the thanks of my countrymen to you who have given us so much with which to develop our own systems of railways.

"Ninety-seven years ago we sent Horatio Allen, a young American engineer in the employ of the Delaware & Hudson Canal Company, to England in quest of information about railroads. If they were a good thing, the American company thought it might do something in that line. According to his report to his employers young Allen was very cordially received and given every oppor-



The Duke of York Addressing Celebrants After Having Pushed Button Opening Gates of Exhibition

tunity to see for himself all that England had to offer in the way of railroads. Evidently that part of the report can be accepted by all of us who have witnessed the splendid hospitality which England has lavished upon the delegates to the International Railway Congress.

"One of the places visited by Allen was Darlington and the Stockton & Darlington Railway, which he described at some length. This celebration of the centennial anniversary of the Stockton & Darlington Railway is 86 days ahead of time. I have always heard it said that the English were a forehanded people and that is again evidenced by this incident. However, no harm has been done, as the railroad's first century can afford to be embalmed in history defrauded of 86 of its latter days, for even thus maimed it can point to a record of achievement without a parallel. No other century since the world began was crowded with such great events, with such tremendous progress.

"When Watt produced a practicable steam engine a century and a half ago mankind was still submerged in the darkness and poverty of the middle ages. That invention met with a cool reception for the first half century of its existence, for the world had no use for steam engines, or thought it had none. What incentive could there be for genius to devise machinery, driven by cheap and unlimited power, for manufacturing the comforts of life in quantities at low cost, when right up to the close of the eighteenth century the charge for carriage by wagon from London to Leeds was at the rate of £13 per ton or about 13½ pence per ton per mile? Such prohibitive costs of transportation limited markets to the boundaries of a neighborhood. No, the world had no need for steam driven machinery until the railroad appeared. Transporta-

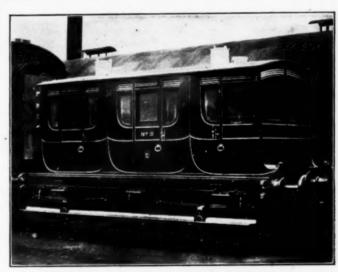
tion is the corner stone upon which the whole structure of modern civilization is reared; and the corner stone could not be laid until the railroad was produced.

"In the thousands of years of recorded history prior to the opening of the Stockton & Darlington Railway mankind by its united efforts had been able to accumulate wealth estimated at approximately one hundred billion dollars. In the century since that momentous event this wealth has been increased more than ten fold, despite the wastes of war. It is impossible to conceive of such an achievement without the swift and cheap transportation afforded by the railroad.

"Young Allen got what he came to England for; that is, he obtained a working knowledge of railroad engineering in the first stages of its development. He returned to his native land to create for himself lasting fame as one of America's first great railroad engineers.

"Allen was followed by a host of other Americans, who also needed assistance. They wanted capital wherewith to build the railroads which were the vanguard of civilization in the United States. Those Americans also got what they came for. British investors have played a notable part in the development of America.

"And now England has just been called upon to deal with another invasion by Americans—railroad men of numerous callings who, like all their predecessors, are after something. In common with their colleagues from other lands, they come to the birthplace of the railroad in quest of ideas. I am sure they have gotten them from the sessions of this latest of International Railway Congresses



An Early English Railway Coach, Built for Queen Adelaide

as well as from their many conversations with the officers of the British Railways.

Future of Railroad Development

"The pioneer era of the railroad is at an end. It is true we have much to learn. Its second centennial anniversary will find the railroad very much further advanced than it is now. But the process of education will be much easier for us than it was for your fathers, because by their efforts certain basic principles have been established for our guidance. We and our successors will not have to begin, as they did, at the beginning, with only a nebulous conception of what was wanted and with no precedents whatever for producing it.

"It is true that much of the earth's surface and a large part of its inhabitants are still to be provided with railroad facilities; but the process will be infinitely easier than it was in the days before excavating machinery and high

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explosives were invented. There are still great opportunities for railroad building and its attendant national development in your own British Dominions. China is awakening. Perhaps the day may not be far distant when that great country, the gateway to the vast hinterland of Asia, may call for many thousands of miles of railroad to make available for the needs of the world the immense natural resources which have been lying dormant there.

"Whenever the call comes, or wherever it comes from, we may be confident that the railroad builders and operators will be found ready and willing and that the allotted task will be performed, not merely as nominated in the bond, but with that same devotion to service which has made the accomplishments of this closing century of railroad activity exceed the visions of Stephenson."

After the procession had been run on July 2, "Locomotion No. 1" was placed in the exhibition in the car shops, and the rest of the locomotives were placed in an adjacent track exhibit. When in the procession "Locomotion No. 1" seemed to be running by steam, but in fact it was feared her boiler might explode if she were placed

under steam and she was supplied for the day with a motor. The exhibits inside and outside the shops constituted a remarkably complete and beautiful display of all kinds of equipment. Inside there were not only many full-sized passenger cars of all periods and kinds, but also many models. The track exhibit included the widest possible assortment of cars as well as locomotives. Among the freight cars were some new 40-ton coal cars—not large according to United States' standards, but which looked enormous where they were.

Naturally, the lead in the centenary celebration was taken by the London & North Eastern, of which the Stockton & Darlington is now a part; but all the British railways actively supported the project by supplying historic equipment, helping bear the cost and having their officers participate; and the total cost incurred in connection with the celebration must have been substantial. However, considering the importance of the event commemorated, and the presence of railwaymen from almost every country where there are railways, the celebration was entirely worth while.

Missouri Pacific Gets Hopper Cars With Improved End Design

About 12½ per cent added capacity secured without increasing car size—Other advantages

HE Missouri Pacific has recently received from the Maxload Car Company, Chicago, 250 all-steel, 50-ton hopper cars, this equipment having been built at the Standard Steel Car Company's plant, Hammond, Ind. The feature of particular interest about the cars is the improved Maxend construction which utilizes to a certain extent end space commonly vacant in this type of car. The increase in load carrying capacity, which amounts to about seven tons, is made possible without increasing the size of journals by the recent American Railway Association ruling that permits loads up to 169,000 lb. gross weight on the rails with 5½-in. by 10-in. journals.

In the U. S. R. A. and other familiar designs of hopper car, the floor of the car slopes from either end toward the

center at an angle of about 30 deg. in order to permit dumping the load through hopper doors in the center of the car between the trucks. There is a considerable open space under the slope sheets which is not used. In the Missouri Pacific hopper of Maxend design, sloping floors are provided in the ends of the car leading to a pair of hopper doors on either side, the load in each end of the car being in this case dumped through side hoppers outside of the rails. Approximately seven tons, or 12½ per cent, are added to the capacity of the car without increasing its overall dimensions or appreciably increasing its weight.

The Maxend principle does not in any way change the construction of any of the fundamental members of the



General View of New Missouri Pacific Hopper Built to Embody "Maxend" Principle

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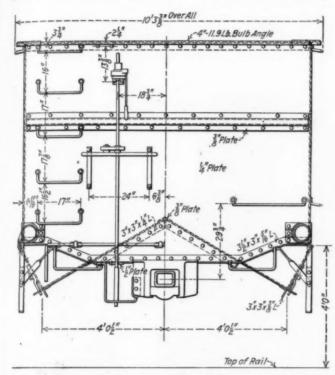
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car frame but consists simply in a change in the position of the sloping end floors and the application of end plates and additional side plates. Since it does not change any important dimensions of the car it is easily applicable in repairing old cars or in the construction of new cars without changing the fundamental design. A sample car of this type has been in use for upward of two years and is said to have shown itself more than equal to the old type



The Arrangement of End Slope Sheets and Hoppers

cars in general strength and resistance to buffing blows. The hopper end doors, as shown in the illustrations, are of simple and rugged design not likely to involve an appreciable increase in maintenance charges.

The principal dimensions of the new Missouri Pacific hopper cars are: length over striking plates, 31 ft. 11 in.; width over top flange angles, 10 ft. 34 in.; height from rail to top of sides, 10 ft. 9 in.; capacity (level), 2,100 cu. ft., and capacity (with 30 deg. heap), 2,455 cu. ft. The cars have continuous center sills and are equipped with Bradford rocker type or Waugh draft gears. Dalman-Chilles trucks are furnished on 100 of the cars, the other 150 being equipped with A. R. A. standard trucks having cast steel side frames with integral boxes and Huntoon truck bolsters. Perfection ratchet hand brakes are provided in connection with the Jemco brake arrangement. The center hopper doors have Wine door latches.

Quite a number of advantages result from the use of Maxend construction in hopper cars, the principal one being increased capacity without changing any essential standards in the railroad's design of hopper car. From an investment point of view only seven cars need be purchased to obtain practically the same capacity as with eight cars of the old type. From an operating standpoint every possible ton of additional paying freight in a car is of great importance and in this case the increase in capacity of seven tons at an average coal freight rate of \$3 per ton means \$21 increased income every time the car is loaded. Moreover, the length of a train of these cars is relatively shorter for the same gross ton handled and there are fewer cars to haul, maintain, brass, record, etc.

An interesting condition developed when unloading

tests were conducted on the new car in that it proved to be practically automatic in unloading 100 per cent of the contents of the car. The coal in the ends was delivered through the side doors and the vibration as it passed out caused the remaining coal on the 30 deg. slopes to slide to the center hoppers. Actual tests are said to have shown that the Maxend hoppers will drop 12½ per cent greater load in one-half the time that the U. S. R. A. car can be unloaded. By keeping the center hoppers closed a much larger proportion, up to 60 or 70 per cent, can be unloaded through the end doors clear of the rails. This materially reduces the labor charge of removing coal from between the rails where a hopper car has to be unloaded on a surface track with no dumping facilities.

Quite a number of these Maxends have been built into Hart selective ballast cars, the ballast being delivered to the center and sides of the track entirely at the will of the



Details of Side Hopper Door and Latch

operator. The hopper doors on each side are operated independently in full view of the operator, and the amount of distribution required for shoulder reinforcement is entirely under his control. The distribution of material is even and said to require no subsequent hand work.

A New Development in Long Time Burning Switch Lamps

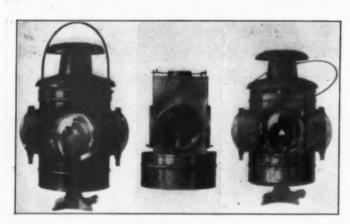
In order to secure a long time burning switch light, the Todd Specialties, New York, have developed a design of lamp wherein long time burning is secured by eliminating those factors which tend to prevent a lamp from burning steadily for protracted periods. This has been done by a method which it is claimed eliminates soot, smoke and wick carbonization and by the use of a large capacity fount sufficient for over a ten-days' supply, although the lamp is normally classed as a seven-day lamp. Numerous tests of these lamps have demonstrated that they will maintain a satisfactory flame for periods of from 30 to 60 days or longer without any attention other than

refilling the fount. This new lamp conforms to the standard R. S. A. dimensions and is rugged in con-

The lamp is air and watertight up to the point where the hinged cover rests, and when this cover is thrown back the inner lamp can be lifted out by a bail attached to it, without touching any of the heated parts. The inner lamp carries a 36-oz. fount, the bottom of which is made in one piece, and a rectangular casing in which four clear glasses are fitted.

One of these glasses is the hinged access door. The filler cap is placed outside the lamp casing, as it is not generally necessary to open the inner lamp while tending. No glass chimney is used. When the cover is closed, the inner chimney in the cover is forced down on to the top of the inner lamp, making an air-tight joint.

The air enters the lamp by a series of holes around the circumference of the cover and just under the protecting curve of the roof. It then passes through a baffle and insect screen and flows downward between the inner lamp and the outside casing. As the upper part of the inner lamp is insulated by a cone piece inside, the air is only gradually heated with the result that the inner surface



The New Seven-Day Lamp

of the fresnel is subjected only to cool air and condensation does not occur. The air enters the inner lamp through a series of holes at the base, and serves mainly as a carrier for the ascending gases, only a portion of the oxygen being consumed.

The location of the inlet and outlet holes is such that driving rains and wind storms cannot affect the operation of the lamp.

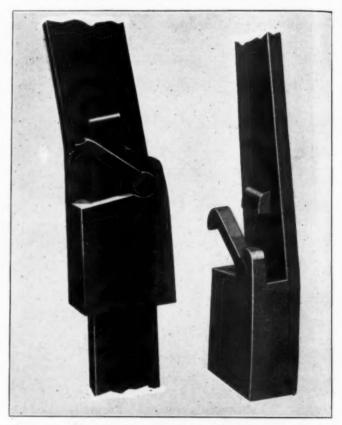
The method of oil burning depends upon two patented features. The first is a vaporizer so constructed as to limit and control the quantity of oxygen available for combustion at the tip. This local restriction of oxygen prevents complete combustion from occurring at the surface of the wick, and allows a temperature only sufficiently great to vaporize the oil. The heated and unburned oil vapor rises through the vaporizer, receiving a further supply of oxygen at the top where it can combine readily to produce a luminous flame. In addition to this reduction in wick temperature, a further precaution against carbonization has been made by the utilization of a specially prepared wick.

Selected long fiber cotton is used and is treated by a process to prevent any possible formation of tarry or carbon-caked deposit on the surface of the wick.

The lamp is so designed that any high grade kerosene, free from water and dirt and reasonably free from sulphur and other mineral impurities, can be burned in it.

Automatic Latch for Grate Shaker Bars

HEN using the box-type grate shaker bar there is always the danger of it working off of the grate shaker post and causing an injury to the fireman. The universal automatic latch, shown in the illustration, is designed with a positive lock to prevent such accidents. The weight of the bar, when it is applied to the shaker post, automatically closes the latch. The shaker bar cannot be removed without tripping the latch, which is very readily done with the foot. The bar will not



Automatic Latch Prevents Grate Shaker Bar from Slipping Off of Bar Post

bind or stick to the shaker post, as tripping the latch raises it $\frac{3}{8}$ in. before it can be removed by hand. To provide ample strength in the locking portion of the latch it has been made 13/16 in. in diameter. It is made in one piece and cannot be lost off as it is welded in place.

This device is manufactured by the Safety Boiler Equipment Company, Indianapolis, Ind.

THE CANADIAN PACIFIC SHOW at Wembley this year includes a Wonderland for children in the shape of Treasure Island, which is encircled by a miniature train drawn by a replica of one of the giant Pacific type engines. There the children see the sandy beach on which Robinson Crusoe and his man Friday disport themselves. They can meet well-beloved characters out of the story books, such as Long John Silver, Jim Hawkins, Tweedledum and Tweedledee, and they can visit caves and Noah's arks with strings of moving animals, see 17th century ships manned by pirates, etc. The train passes through the Connaught Tunnel and winds in and out of the Canadian Rockies through the Great Divide, passing realistic reproductions of Banff and Lake Louise, and there is a park full of "wild" animals and all sorts of marvelous things.

Is There a Need for Maintenance of Way Cost Data?

Does the budget system make this accounting unnecessary in track and similar work?

By J. L. White

HE 1924 statement of operating revenues and expenses of Class I railroads issued by the Interstate Commerce Commission showed an operating ratio for the year of 76.14. This is a decrease of 1.61 from 1923 and indicates an encouraging step forward along the road to the pre-war ratio of revenues to expenses. Let us see just how far ahead that goal now is.

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The following table gives the ratios of the principal groups of operating expenses to total operating revenues in 1924, compared with these ratios for all railroads in 1908.

	Ratios of expenses to revenues						
	1924	1908	Increase or decrease 1924 over 1908				
Maintenance of way and structures Maintenance of equipment Transportation and other expenses	13.40 21.22 41.52	13.50 15.09 41.49	-0.10 6.13 0.03				
Total operating expenses	76.14	70.08	6.06				

It is interesting to note that the ratios for "maintenance of way and structures" and for "transportation and other expenses" were approximately the same in 1924 as in 1908, while the ratio of "maintenance of equipment" expenses was 6.13 higher.

Another interesting comparison is between the ratios for 1924 and the ratios for 1913 and 1916. The net railway operating income in 1913 was the largest for any year of the pre-war period, while the net railway operating income in 1916 was the greatest ever earned by the railroads as a whole. This comparison is given in the following table:

0	Ratio of expenses to revenues									
,				Increase	1924, over					
	1924	1916	1913	1916	1913					
Maintenance of way and structures Maintenance of equipment Transportation and other expenses.	13.40 21.22 41.52	11.72 16.56 37.26	13.25 16.00 40.85	1.68 4.66 4.26	0.15 5.22 0.67					
Total operating expenses	76.14	65.54	70.10	10.60	6.04					

This table indicates that the ratios for maintenance of way and structures expenses and for transportation expenses are nearly back to the pre-war level, although higher than the record year of 1916, while the ratio for maintenance of equipment is still out of line. While the better showing for transportation expenses is partly at the expense of maintenance of equipment on account of the increase in tractive power of the locomotives, which reduce transportation expenses, but increase maintenance of equipment costs, this cannot be said of the maintenance of way ratio. The heavier locomotives and trains would tend to increase the cost of maintaining the track and bridges

While these figures on the surface indicate a more satisfactory situation with respect to maintenance of way than maintenance of equipment, so many factors affect the ratios of expenses to revenues that a careful analysis is required of all phases of the situation before a final conclusion can be reached.

In a previous article in the Railway Age (March 1, 1924), the writer called attention to the unfavorable situation with respect to the ratio of equipment maintenance to revenues and the necessity for a careful and continuous analysis of the expenses and unit costs of maintaining equipment. The purpose of this article is to point out the desirability of an equally careful analysis of the expenses of maintaining the roadway and structures in spite of the more favorable ratio of these expenses to revenues.

Maintenance of way and structures expenses are susceptible of control by the budget system to a greater degree than maintenance of equipment expenses. The margin between the minimum expenditures required by safety and the maximum expenditures required by normal standards of maintenance is wider in the case of repairs to roadway and structures than in the case of repairs to equipment. Consequently when the revenues fall off and retrenchment is necessary, there is a greater opportunity of a reduction in the maintenance of way budget, based on normal standards of maintenance, without endangering the safety or efficiency of the operation, than in the case of the maintenance of equipment. The ratio of maintenance of way expenses to revenues is thus kept under better control.

The amount of normal maintenance of way and structures deferred in this manner is not a matter of public record and may not even be apparent to the patrons of the road. On the other hand, if maintenance of equipment is "skinned," the results appear immediately in the semi-monthly reports of bad order cars and locomotives issued by the Car Service division of the American Railway Association or in the monthly reports of the Interstate Commerce Commission and the Bureau of Railway Economics.

Furthermore, the effect of deferred maintenance of equipment is quickly felt by the patrons of the road through the increase in engine failures and the general deterioration of the service.

The Regular Published Reports

There are no regular published reports of the condition of the track, bridges and other structures, nor is the public generally informed as to the renewal of ties, rails or ballast or other maintenance of way work performed. The annual reports of the Class I railroads to the Interstate Commerce Commission contain statistics of ties and rails renewed, and the annual reports to the stockholders made by some railroads contain additional statistics of the work performed in maintaining the roadway and structures. As a rule, however, the statistics of this nature available to the public are not sufficient to permit an intelligent analysis of the extent to which the expenditures during the year represent either more or less than normal maintenance, that is, how much maintenance was deferred to subsequent years, or, on the other hand, how much maintenance deferred from previous years was

made up during the year in addition to the normal maintenance.

The glare of publicity to which the other operating expenses of a railroad are subjected is noticeably lacking in the case of maintenance of way and structures. The question before us is whether this lack of publicity and the control of these expenses afforded by the budget system justify railroad executives in dispensing with the analysis of unit costs of maintenance work as actually performed and in assuming that if the total expenditures are under strict control, the unit costs are equally so.

. It is true that many railroads develop unit costs of maintaining way and structures based on the miles of track maintained. These units merely reflect the property to be maintained and not the work actually performed. Furthermore, on many railroads, the change in track mileage from year to year is so small that the average expenditure per mile of track maintained merely reflects the fluctuations in the total expenditures. this unit cost, based on miles of track maintained, is helpful in comparing the expenditures of two periods in which there is a substantial difference in the miles of track maintained, it does not throw any light on the actual cost of doing the work in one period as compared with another. For this purpose, it is necessary to develop unit costs based on units which reflect the work actually performed, such as the number of ties or tons of rail

The report of the Committee on Records and Accounts of the American Railway Engineering Association at the 1925 convention indicates that the maintenance of way officers are keenly alive to the importance of developing unit costs for the more important classes of maintenance of way work, particularly track work. Unfortunately the primary maintenance of way and structures accounts as prescribed by the Interstate Commerce Commission are not in sufficient detail, particularly with respect to the distribution of track labor, to permit the development of these unit costs. While there is nothing in the classification of the commission to prevent the accounting department of any railroad from sub-dividing the primary accounts as prescribed by the commission in such a way as to give maintenance officers much of the information they require for the development of unit costs of track work, this would undoubtedly involve additional clerical expense. It is not probable, however, that this additional expense would be excessive, and the information made available to maintenance officers should be well worth the expense.

The principal information required for the development of unit costs of track work is the subdivision of Account 220, "Track laying and surfacing" between the various classes of track work, and the segregation of the direct labor from work train expense. The distribution of track labor is based on the report of the section foremen and it has been claimed that this distribution as between the present primary accounts 202, "Roadway maintenance," and 220, "Track laying and surfacing" is largely a matter of guess work. There does not appear to be any good reason why a reasonably accurate distribution could not be obtained if the daily time reports by section foremen as recommended in the report of the Committee on Records and Accounts of the American Railway Engineering Association were adopted and properly supervised.

When we consider that the amounts included in these principal track labor accounts, 202, 220 and 272 for all Class I Roads in 1923 aggregated \$306,000,000 or 38 per cent of the total expenditures for maintenance of way and structures, the importance of an accurate basis of distribution of this section labor is apparent. Account 220,

"Track laying and surfacing" amounted to \$210,000,000 or about 25 per cent of total maintenance of way and structures and it is the subdivision of this account between the cost of applying ties, rail, ballast and other track material, and other track work not requiring the application of material that must be made if unit costs of track work are to be developed.

Another important factor in the problem is the fact that track labor is largely unskilled and that there is a large turnover on some railroads. This situation makes the development of unit costs of track maintenance all the more important as a check on the efficiency of these unskilled and frequently changing forces.

Satisfactory as the control of the total expenditures for maintenance of way and structures may be through the budget system as evidenced by the return to the prewar ratio of these expenses to revenues, this does not necessarily mean an equally satisfactory situation with respect to unit costs of work actually performed.

There is still another reason for cost accounting in the maintenance of way department. The Transportation Act of 1920 provides that rates shall be so fixed as to yield a fair return on the value of railway property used in the service of transportation under "honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment." Certainly no proof of efficient and economical management is complete without an analysis of the unit costs of performing the principal classes of work involved in operating and maintaining the property.

Unit costs of train and engine service are developed currently by most railroads and form the basis for an analysis of the efficiency and economy of the management with respect to transportation operations. Unit costs of maintenance of equipment (except freight cars) are developed currently by most railroads and, taken in connection with the semi-monthly condition reports, form the basis for an analysis of the economy and efficiency of the management with respect to maintenance of equipment. This analysis, however, cannot be as complete as that of transportation expenses for the reasons pointed out in the article previously referred to. Unit Costs of maintenance of way and structures are not developed by most railroads in such a way as to form the basis for an analysis of the economy and efficiency of the management with respect to these expenditures.

In this connection it is interesting to note the conclusions of the Committee on Records and Accounts of the American Railway Engineering Association, that the development of unit costs of maintenance, particularly of roadway and track, will facilitate the analysis and control of expenditures and will bring about economies of maintenance. In view of the conclusions of this committee and the provisions of the Transportation Act referred to above, it would seem advisable for railway executives to take the initiative in this matter and instruct their accounting officers to arrange for such subdivisions of the primary maintenance of way and structures accounts as are necessary to provide the basis for developing unit costs for the more important branches of the work of maintaining the way and structures of the railroad.

Motor Vehicles registered in Canada in the past year numbered 650,231, according to the annual report of the Commissioner of Highways, about one to every 13 of the population. Ontario, with 309,441 registrations, led all other provinces. Quebec was next with 85,145, followed by Saskatchewan with 70,748; British Columbia, 48,626; Alberta, 48,547; Manitoba, 44,262; Nova Scotia, 20,764; New Brunswick, 20,003; Prince Edward Island, 2,590, and the Yukon, 105.

Price Trends and Purchasing Problems

Impetus to development of new materials and methods seen in irregular commodity costs

by railroads for the upkeep, operation and improvement of their properties have not shown the uniformity commonly believed in their trends, but, that instead, they have been irregular to the point of making the problem of economical purchasing difficult and of adding impetus to the development or adoption of new materials and methods that will bring relief in numerous directions, are among the conclusions brought out by a study of the prices which have been paid by one of the large railroads of the country since 1914, as disclosed in the accompanying charts.

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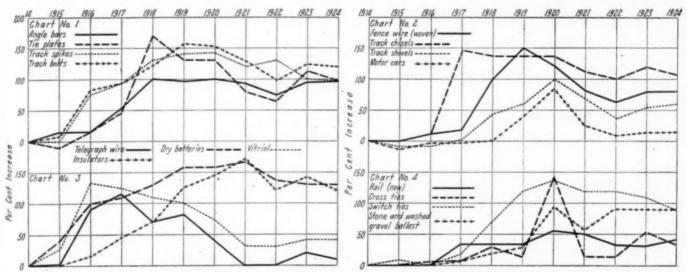
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These charts were developed from a study of the unit prices for about 120 different classes of materials and supplies representing a still larger number of items. The prices on which they are based are the average invoice prices paid each year for each article or class of materials as determined from purchasing records by taking the

1914. Constructed in this manner the charts disclose the trend in the prices of each article of a class of supplies through the period and also a comparison of the trend of prices of one commodity with the prices of others. In addition to a total of 80 curves showing separately the trend of prices of as many articles or classes of supplies, a separate chart is produced on which is plotted a curve representing the trend of the average of unit prices paid for all of the original list of 120 representative articles and classes of materials considered, including structural steel and other commodities not shown in the chart.

In any study of price levels for a period, where the largest quantity of data that it is possible to obtain is seldom enough to present a true picture of conditions, it follows that even exhaustive data from a single property usually leaves much to be desired. Thus it is recognized and should be emphasized that the accompanying charts, each of which contains the curves of but four commodities



Charts Nos. 1, 2, 3 and 4, Prince Trends from 1914 to 1925 for Representative Maintenance of Way and Signal Supplies

average prices paid for the particular article in question during the year or the average prices paid for a representative item of the class, where the price of a class is in question, or by averaging the prices paid for each of several items in a class where this is essential to the analysis. Thus in the case of cement, the yearly price merely represents the average of unit prices paid for this material. On the other hand, the price of yellow pine represents the average unit prices paid for 2-in. by 4-in. by 16-ft. stock, while in the case of malleable castings the unit price represents the average price paid for a large number of shapes, weighing from 7 to 15 lb.

On these charts the prices are shown in terms of the percentage increase of each year's prices for the several commodities, compared with the average unit prices paid in 1914. Thus, as shown in chart No. 1, the price paid for track spikes was 73 per cent higher in 1916 than in 1914; 93 per cent higher in 1917; 133 per cent higher in 1918; 142 per cent higher in 1919 and 1920; 120 per cent higher in 1921; 130 per cent higher in 1922; 103 per cent higher in 1923 and 95 per cent higher in 1924 than in

for the sake of clearness, cannot be expected to reflect with exactness conditions on individual roads. Relative to some commodities it is probable that they do not reflect local conditions on some roads even approximately. The reason of course is that the prices paid by railroads for their supplies from time to time are governed very largely, and in some cases almost entirely, by local conditions such as the distance from markets, the time of purchase, the policy of purchasing, the quality of supplies, the quantities involved, the conditions of payment, the personal qualifications of contracting parties, etc.

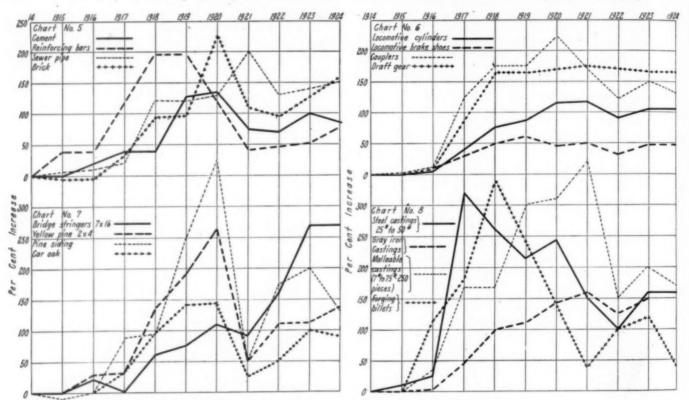
However, while the levels found in the prices of certain commodities of one road from one year to another are at best precarious measures of the price levels elsewhere, the general trends of these prices over a period of years for a representative list of commodities, considered by themselves and in relation to each other, have a value in picturing general as well as local problems which makes them a profitable source of study, particularly when, as in this case, they disclose a situation on a road which is representative of carriers which, by reason of their size,

organization, financial condition, relation to markets, etc., are in a position to do their purchasing on a generally stable and economical basis.

Prices 93 Per Cent Higher Than in 1914

These charts as a whole bear out the general understanding that prices of supplies increased from the beginning to the close of the war and thence declined. How much the total increase was and how great the reduction since has been can only be arrived at by rough approximation. For any road, obviously the most accurate determination is one of weighted averages, necessitating the averaging of prices for each commodity in the proportion which the consumption of that article or material bears to all material. It is interesting to note, however, that according to the simple averaging of the percentage variations in prices of the 120 representative commodities included in this study the average price paid for materials

much as 47 per cent lower. Indeed the prices of a number of supplies are shown to have remained below the 1914 price as late as 1918, while some never did get far out of line, notably electric light globes and some paint supplies, the price of globes and varnish being actually less in 1923 than in 1914 on this railroad. As against the favorable trend of these few commodities, however, the charts record sufficiently clearly without further explanation that numerous of the supplies which showed stability in the early period when other prices were rising proved eventually to be among the chief disturbers of price trends, tie plates for instance rising from minus 10 per cent in 1915 to 50 per cent in 1917 and to the high level of 160 per cent in 1918 before some commodities that started sooner had reached their respective peaks; likewise brick, rising from the base line in 1916 to the high level of 225 per cent in 1920; so also lagging, rising from the base line in 1915 to a high level of 300 per cent



Charts Nos. 5, 6, 7 and 8, Trends of Lumber and Construction Materials, and Materials for Cars and Locomotives

and supplies in 1923 and 1924 was still 93 per cent higher than the average price in 1914, as compared with 140 per cent in 1920 and 1921. This disclosure is of material assistance in explaining the continued high level of total expenditures being made by railroads for materials and supplies as compared with 1914, notwithstanding the decreased consumption of some commodities or other economies which have presumably resulted from improved practice in management or operation.

It is evident from the charts, however, that neither was the change in prices regular during the period of ascending costs disclosed by the average trend, nor have many of the commodities responded to the general decline in such a way as to permit of placing much faith in them for certain aid in reducing total expenditures. Instead of increasing, numerous supplies remained at the same level or decreased in price in the two or three years immediately following 1914. Of the latter supplies, there are 21 of the 80 shown in the charts which were below the base line in 1915, including tie plates, track shovels, bricks, piston rods, rivets, hose, creosote and oil, with piston rods as

in two years, to say nothing of some of these supplies which, having started to rise, have continued, steadily or erratically, through the period toward new high levels, notably bridge stringers, locomotive cylinders, piston rods, white lead and creosote.

From reviewing the charts it appears that in general the maintenance of way materials have followed more nearly the average price trend, these materials rising gradually to a peak not exceeding 150 per cent in 1919 and thenceforth descending with fair regularity to their lower levels in 1924. Exceptions to this are ballast materials (the trend in which has been included more for its interest, however, than for information), together with rail which has never increased more than 50 per cent over the 1914 prices. Other commodities equalling or surpassing rail in the low range of prices shown include brass products, which never rose above 100 per cent, and, except for finished brass and globe valves, have returned to former levels. Telegraph and telephone line material, with the exception of insulators, are other products which have exhibited favorable trends with telegraph wire drop25

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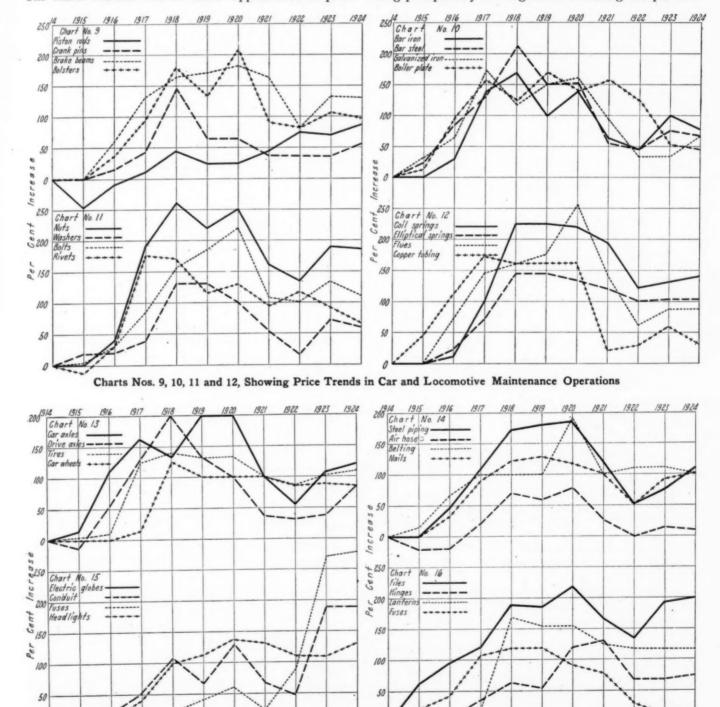
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ping gradually but steadily from a low-high level of 110 per cent to former prices.

Next to maintenance of way materials the trend of bar iron and plate appears to conform more nearly to the average trend with fairly uniform rises to a peak in 1918 and a fairly regular decline since that time to the 100 per cent level in 1924. To some extent this condition is true of such car and locomotive supplies as springs, axles, car wheels and tires, and perhaps even of bolts and nuts. But the percentage increase is higher in every case and the rise and fall far from regular. Except in these instances, it appears that the trend of prices among car and locomotive supplies bears but slight, if any resemblance to the average trend or even in a degree to each other. The charts indicate that all these supplies rose in price

but where some rose gradually and steadily, as was the case with locomotive cylinders, brake shoes, draft gears, couplers, gray iron castings, pipe, nails, etc., a greater number rose precipitously and with irregularity, notably steel castings, babbitt, lagging and firebrick, which reached levels exceeding 250 per cent, while in practically all cases the trends thenceforth were characterized by baffling irregularities in the price levels of each commodity and as between different commodities. This condition is brought out with special force in charts 8 and 18, where the range in levels and irregularity in trends are such as even to confuse the eye.

The trends in the price of lumber also are conspicuous for the range of levels and for irregularities, with siding rising precipitously to a high level exceeding 400 per cent

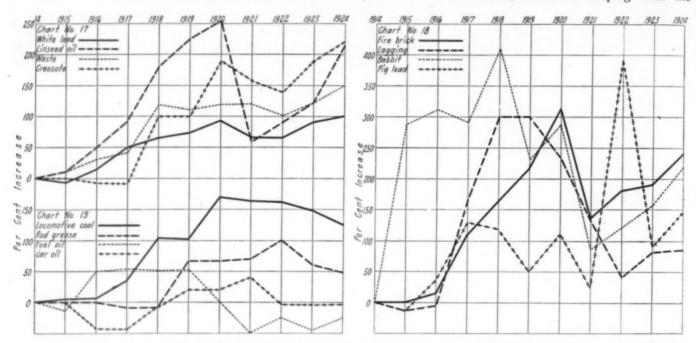


Charts Nos. 13, 14, 15 and 16, Showing Other Car and Locomotive Materials with Typical Electrical and Transportation Supplies

in 1920 and dropping as quickly with other lumber to 50 per cent a year later, only to rise again in an uncertain course, while with coal, electric supplies, and painters supplies, the trend has not only been irregular but continually upward. It appears that less than half of the 80 commodities charted followed trends in prices which showed any degree of regularity either up or down, while certainly in no larger number of instances was the price trend of one commodity of much use in forecasting the price of another for, as the charts indicate, there was about as much likelihood of a jump one way as another.

ously from 30 per cent below the 1914 price to 260 per cent above. An examination of each chart would seem to indicate that less than half of the supplies show trends that are noticeably inclined toward regularity for the future, notably cylinders, brake shoes, piston rods and brake rigging, bar iron, springs, wheels and oils, while the others are sufficiently uncertain to emphasize the importance of eternal vigilance in purchasing.

Probably the most striking disclosures of the charts are, on the one hand, the reluctance shown by many prices to return to levels more in keeping with the



Charts Nos. 17, 18 and 19, Showing Price Trends for Painter's Supplies, Lubricants and Miscellaneous Locomotive Materials

If this erratic condition of prices was a burden on supply houses, it was equally a burden on the railroads in meeting their requirements not for 80 but for several thousand articles of supplies and material, by making it difficult if not impossible to purchase supplies at the most favorable prices. It is unquestionably true that this erratic condition of price levels has been accountable to some extent for the enormously higher expenditures

average trend and, on the other, the pronounced tendency of some prices to continue rising as though unacquainted with the fact that the war is over. It is observed that of the 80 commodities listed the prices of about 22 ranged above the 150 per cent level in 1924, including numerous commodities purchased in imposing quantities, for example, nuts, axles, pipe, linseed oil and firebrick, while several show a progressively increasing price from

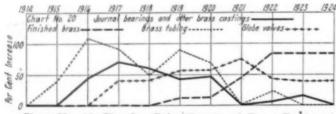
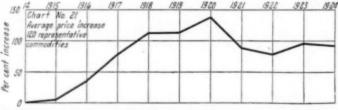


Chart No. 20, Showing Price Trends of Brass Products

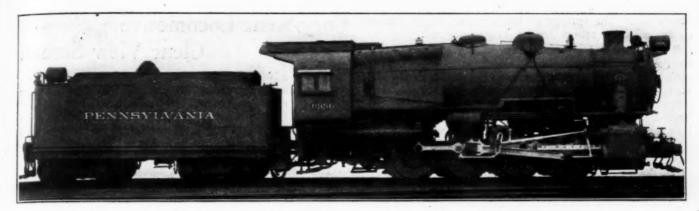


The Aggregate Commodity Chart, Showing Average Price Trend:

required for materials and supplies in recent years. In anticipation of the strenuous efforts which it seems will be put forth in the coming year to reduce total expenditures, consistent with economical operation, it is interesting to discover from the charts what, if anything, can be expected in the way of relief from this turbulent, if not chaotic, condition of price trends, where the buyer's good fortune on one occasion or in purchasing one class of material is apt to be offset largely by his misfortune on another occasion or with another class of material.

It is to be observed, however, that the prices in 1924, while averaging 93 per cent higher than in 1914 for the representative commodities studied, still range vari-

1914, notably car oak, locomotive cylinders, piston rods, electric fuses, waste and creosote, the price of car oak in 1924 being 250 per cent higher than in 1914 on this road with creosote 220 per cent higher. In addition to those supplies which have steadily risen in price there are numerous other supplies to be found in the charts, the price trend of which has turned upward again in recent years. It is entirely probable, of course, that many supplies in this category will experience a scaling down in price, but it appears equally certain that others will find new high levels. The effect of this tendency will probably be to give impetus to the study and development of new or improved supplies and methods.



Eight-wheel Switching Locomotive Built by the Pennsylvania Railroad

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Pennsylvania Builds Eight-wheel Switching Locomotive

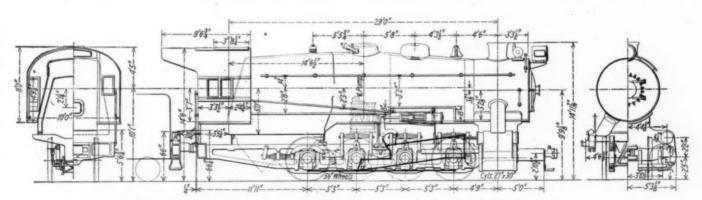
Designed to provide greater tractive force for work in large yards and terminals

N eight-wheel switching locomotive has recently been completed at its Juniata shops, Altoona, Pa., by the Pennsylvania Railroad. This locomotive, known as the Class C1, is the first to be delivered on an order for 50 placed with the Altoona works several months ago. The heavy freight trains now handled over the Pennsylvania system by the Class IIs locomotives require more powerful switching locomotives at terminal points and hump yards where the trains are classified. These locomotives, designed to meet this growing need, will be

the double function of braces and brake foundations, and to some extent reduce the cost of machine work.

The front end of the locomotive is equipped with a bumper, frame brace, and draft gear support combined in one casting and located between the frames. Separate bumper extensions are used. The draft gear is the same as used at the rear end of the tender, and is included in this locomotive design for the first time on the Pennsylvania system, because of the large capacity.

The coupler has a 6-in. by 8-in. shank, and is pivoted on



General Elevation and Cross Sections of the Pennsylvania Eight-Wheel Switcher

distributed to various points on the system where traffic is of such a nature as to require switchers providing greater tractive force.

These locomotives have cylinders 27 in. by 30 in., driving wheels 56 in. in diameter and a boiler designed to carry a steam pressure of 250 lb. The estimated weight is 275,000 lb. and the rated tractive force is 76,155 lb., estimated at 78 per cent of the boiler pressure, which gives a ratio of weight on drivers to tractive force of 3.62.

The frames are made of cast steel, suitably braced with cast steel and plate crossbraces. The plate braces perform

the pin through a yoke used in connection with the N-11-A Westinghouse draft gear.

The whole gear is set in from the end, and is held in

place by two vertical keys.

The brake rigging is of the conventional locomotive type, of a rather simple construction, and includes two 18-in. by 13-in. air brake cylinders, each cylinder actuating the brakes on two pairs of drivers. The brake cylinder is attached to one of the pressed steel frame braces, and the main brake lever is anchored to another transverse pressed steel frame brace.

The spring rigging presents the usual three-point

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suspension. The springs of the forward driver are not connected to the others, but are cross-equalized.

The guides and crossheads are of the latest type used on the Pennsylvania system, which have large bearing area, thereby reducing the wear to such an extent that no take-up for wear is expected to be necessary between shoppings. The guide yoke is a rectangular steel plate, braced to the boiler with braces extending from a point between the guide yoke and frame radially to the boiler.

The links are suspended from overhanging castings, which also form bearings for the lift shaft, and are braced to the boiler in the same manner as the guide yoke.

The link motion is of the usual Pennsylvania system type, actuating piston valves 8 in. in diameter. The valve lap is 1¾ in. and the valve bushings include starting ports, which permit steam to enter the cylinder up to 80 per cent of the stroke. The valve travel is 6 in. The maximum cut-off in full-gear for the valve proper is 60 per cent. It is estimated that this limited cut-off principle will reduce the steam consumption, in switching service, approximately 30 per cent.

The boiler is of the Belpaire, wide firebox type, with Type A superheater, and contains 269 2-in. tubes, together with 40 superheater units, each unit composed of a 5½ in. flue containing four ½-in. superheater pipes. The tubes and flues are 15 feet long. The firebox, which is relatively short, is provided with a brick arch and the boiler contains a shallow combustion chamber.

With the exception of the IIs and NIs classes of locomotives, this switching locomotive has a greater drawbar pull than any other non-articulated locomotive on the Pennsylvania. It will, therefore, be capable of handling in yards any train that the IIs or NIs locomotives can haul singly, and many trains that with other classes of freight locomotives require double-heading.

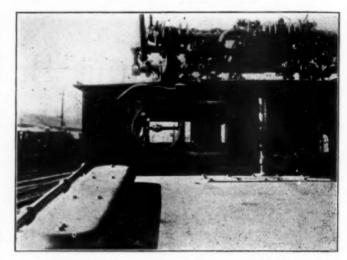
TABLE OF DIMENSIONS WEIGHTS AND PROPORTIONS

TABLE OF DIMENSIONS, WEIGHTS AND PROPORTIONS
Railread Pennsylvania Builder Pennsylvania Type of locomotive 0.8-0 Service Switching Cylinders, diameter and stroke 27 in. by 30 in. Valve gear, type Walschaert Valves, piston type, size 8 in. Weights in working order: 275,000 lb. Total engine 275,000 lb. Total engine and tender 156,000 lb. Total engine and tender 431,000 lb.
Driving
Driving
Boiler: Type
Heating surfaces: Firebox, comb. chamber and arch tubes. 237 sq. ft. Tubes and flues 2,977 sq. ft. Total evaporative 3,214 sq. ft. Superheating 960 sq. ft. Comb. evaporative and superheating 4,174 sq. ft.
Tender: 7,300 gal. Fuel capacity 31,000 lb.
General data estimated: Rated tractive force, 78 per cent
Weight proportions: Weights on drivers + total weight engine, per cent
Boiler proportions: Comb. heat, surface ÷ cylinder hp. 1.32 Tractive force ÷ comb, heat, surface 18.3 Tractive force × dia. drivers ÷ comb. heat, surface 1022 Cylinder hp. ÷ grate area 51.4

Cory-Kent Locomotive Clear View Screen

HEN a locomotive is running through snow, sleet, rain or fog, the engineman's view is more or less obstructed by accumulations on the cab window. Charles Cory & Son, Inc., New York, have introduced in this country the Kent clear view screen which is designed to keep the locomotive cab windows clear during any weather condition.

The mechanical unit, for a locomotive, consists of a disc, frame, motor and motor bracket, mounted in a polished teak frame which will take the place of an ex-

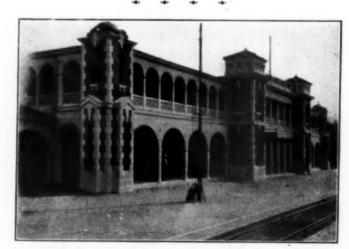


Application of the Cory-Kent Clear View Screen to an Electric Locomotive

isting window. A metal frame, hinges inward to allow access to the front of the disc.

The clear view screen consists of a polished glass disc rotated on a central bearing by an electric motor at such a speed that rain, spray and snow are instantly thrown off. This disc is revolved at approximately 1,600 r.p.m. by a 110-volt d.c. motor with a consumption of about 3½ amperes.

The glass discs used are optically true; that is, the two faces are perfectly flat and parallel to one another. The wind pressures on the revolving discs at various speeds have practically no effect on its revolving speed.



The Santa Fe Station at Barstow, Cal. Known as the "House on the Desert"

General News Department

The Railroad Labor Board has wound up its affairs for the summer and will hold no more board hearings until the latter part of August.

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The Interstate Commerce Commission has reopened for further hearing its proceeding of investigation as to the construction and repair of railway equipment with reference to the equipment of the Chesapeake & Ohio.

In order to reduce the fire hazard, the Denver & Salt Lake is equipping some of its section crews with fire fighting equipment and is having them follow all trains over their sections of the line where there is danger of forest fires, being started from sparks from the locomotive. The danger of forest fires is particularly acute at the present time on account of a long drought.

The total number of persons killed at highway grade crossings in the United States in the first three months of this year was 419, as compared with 464 a year ago; and of injured 1,208 as compared with 1,504. This item is the subject of a circular which has been issued by H. A. Rowe, committee chairman, on behalf of the Safety Section, A. R. A. Mr. Rowe says that the public is taking an increasing interest in the work of his committee, and he calls upon all the members to 'make vigorous use of this wonderfully encouraging report."

Chicago Union Station Dedicated

The new Union Station at Chicago was formally opened to the public and dedicated to its service on July 23 when Samuel Rea, president of the Pennsylvania, and also of the Chicago Union Station Company, Hale Holden, president of the Chicago, Burlington & Quincy, H. E. Byram, receiver of the Chicago, Milwaukee & St. Paul, and J. D'Esposito, chief engineer in charge of the construction of the terminal, held a reception for officers of the city, executives of other railways entering Chicago, and members of the Illinois Commerce Commission. Following a tour of inspection of the station, a luncheon was tendered the visitors.

Locomotive Inspection, First Six Months of 1925

During the first six months of 1925, 40,321 locomotives were inspected by the Bureau of Locomotive Inspection of the Interstate Commerce Commission, of which 18,151 were found defective and 1,910 were ordered out of service, according to the commission's monthly report to the President on the condition of railroad equipment. During June 7,381 locomotives were inspected, of which 3,044 were found defective and 292 were ordered out of service. The Bureau of Safety during the same month inspected 95,215 freight cars, of which 2,709 were found defective, and 2,011 passenger cars, of which 23 were found defective. During the month 16 cases, involving 32 violations of the safety appliance acts, were transmitted to various United States attorneys for prosecution.

Seeks to Prevent Operation of Bus Company

The suit brought by the Illinois Central and the Louisville & Nashville against the Egyptian Transportation System, a bus company, to prevent its operating buses and trucks for freight and passengers between Centralia, Ill., and Carbondale, has been taken under advisement by the circuit court of Madison county at Edwardsville, Ill. The railways' appeal to the circuit court was made after the Illinois Commerce Commission had granted the bus company a certificate of convenience and necessity to operate buses and trucks between the cities named. It is the contention of the railways that they have furnished adequate service and that there is no necessity for the bus service.

The Egyptian Transportation System is one of the largest bus

operating companies in the middle west, operating a network of bus lines in southern Illinois. Recently it entered St. Louis, Mo., with a line from Duquoin, Ill., and it plans eventually to run to Cairo, Ill. The hard roads used by the buses and trucks parallel the railways serving the same districts.

Silver Bay Industrial Conference

President L. F. Loree of the Delaware & Hudson, is to speak on Stabilizing Employment at the Eighth Annual Industrial Conference on Human Relations in Industry, which is to be held at Silver Bay on Lake George, N. Y., August 27-30. C. R. Dugan, assistant to vice-president of the New York Central, and E. K. Hall, vice-president of the American Telephone & Telegraph Company, will speak on the Purpose and Significance of the Sale of Stock to Employees.

Other important topics on the program will be Industry's Obligation to Superannuation and an Evaluation of Present and Proposed Plans; Production Wastes—Material and Men; Basic Factors in Industrial Progress, etc.

Information about the conference may be obtained from Dr. E. H. T. Foster, 347 Madison avenue, New York City.

Nearer Agreement on New Chicago Terminal Project

The railroads participating in the project of the proposed passenger terminal in Chicago to replace the present Dearborn street, Grand Central, and LaSalle street stations, are near an agreement on the important question of the adjustment of land titles in the south side terminal district, according to Silas H. Strawn, Chicago attorney and chairman of a committee of business men appointed by the city to prepare a plan for the equitable solution of the problem. This plan was submitted to a committee of the presidents of the railways involved at a meeting on July 3 and their views on it were reported back to the business men's committee on July 17. The Strawn plan outlines a proposal for a series of real estate transfers and exchanges and calls for the financing by the railroads of the straightening of the Chicago river from Polk street to Eighteenth street as well as the opening of additional streets in the vicinity. In return for this expenditure, according to the plan, the railways are to receive a large portion of the filled-in land where the channel of the river now lies.

Mr. Strawn and his associates propose that the Chicago & North Western and the railways now occupying the new Union Station sell their land holdings east of the new river channel to the railroads now occupying the Grand Central, Dearborn street and LaSalle street stations. According to Mr. Strawn, agreement to the plan by the railroads now waits only upon the verification in a joint survey of the valuation fixed for the involved property by the Strawn committee engineers. These valuations will be the subject of an intensive study to be undertaken at once.

Reduction in Coal in Storage

An inventory of the stocks of bituminous coal in the hands of consumers conducted by the Geological Survey reveals that the total quantity in storage on June 1, 1925, was 38,000,000 net tons, against 44,000,000 tons on March 1, 1925, and 51,000,000 tons on June 1, 1924; the trend of stocks has been steadily downward since the early part of 1924 and the heavy reserves built up by consumers in late 1923 have been reduced to more normal proportions; in fact, the present supply is slightly less than that in the summer of 1921.

Measured in tons, there was a reduction in stocks of 19 per cent during the period September 1, 1924, to June 1, 1925, of which 14 per cent occurred during the last three months. At the rate of consumption prevailing from March 1 to June 1, the stocks on June 1 would last 32 days if evenly divided, a decrease of 29 per cent compared with the 45 days' supply on

(Continued on page 200)

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Freight Operating Statistics of Large Steam Roads—Selected Items for May, 1925,

Freight Op			tive-miles	Car-mi		Ton-miles	(thousands)		Avera	ge number	r
Region, road and year New England Region: Boston & Albany	Average miles of road operated mile 404 255,2 394 260,7 2,348 513,4 2,366 512,3 1,920 484,1 1,960 471,4	ks helper 77 272,763 66 276,674 88 590,957 82 578,735 02 501,995	Light 27,783 27,003 59,345 58,929 31,448 28,124	Loaded (thou- sands) 5,371 5,124 13,432 12,392 13,517 12,832	Per cent loaded 68.7 66.8 71.3 71.3 69.5 70.6	Gross. Excluding locomotive and tender 271,577 263,972 663,753 615,996 684,999 651,197	and non-	Service- able 124 124 349 341 291 308	Un- serv- iceable 17 18 106 128 66 67	Per cent unserv- iceable 11.8 12.8 23.2 27.2 18.4 17.9	
Great Lakes Region: Delaware & Hudson	875 394,5 888 361,4 993 582,2 993 570,1 2,325 889,7 1,357 630,6 1,826 566,2 1,827 547,8 1,669 640,3 1,669 640,3 1,669 648,8 2,198 389,1 2,227 362,1 2,21 116,5 2,247 673,2 2,459 615,6	61 536,101 50 486,836 04 689,582 27 666,128 46 989,952 91,038,036 81 666,311 14 693,191 73 581,433 48 2,203,585 18 2,170,089 652,752 76 663,619 00 395,204 03 395,204 04 37 377,897 117,360 117,3	52,841 44,762 88,586 92,969 101,492 103,795 72,944 73,397 19,809 22,780 149,806 146,949 8,488 3,682 8,159 9,892 1,206 649 11,680 9,562	10,624 10,161 18,578 17,961 34,345 18,131 19,924 17,796 74,984 71,331 20,340 19,312 10,159 9,457 3,926 3,852 21,846 19,085	65.1 69.7 69.7 66.8 64.9 64.8 62.8 63.3 63.9 65.8 65.5 67.2 65.4 67.4 67.4	678,282 619,043 1,034,335 985,623 2,042,874 1,024,874 1,024,9874 1,024,9874 1,054,952 954,918 4,457,961 4,147,421 1,098,978 1,058,740 564,564 529,133 291,035 293,490 1,188,564 1,029,170	335,994 306,059 463,183 440,368 927,949 505,884 509,066 379,514 351,487 1,916,024 1,792,951 428,311 405,043 247,710 238,887 169,373 175,067 472,578 412,230	249 263 298 301 634 663 471 302 287 1,217 1,227 243 250 189 187 72 63 319 296	34 33 63 66 102 94 75 81 52 61 364 411 411 425 16 25 74 58	12.2 17.4 18.1 13.8 12.5 14.7 14.4 17.6 23.0 25.1 20.9 17.4 11.6 18.3 28.8 16.3	84 85 38 27 214 189 97 115 109 76 374 413 57 49 25 28
Haltimore & Ohio	5,196 1,827,3 5,207 1,800,5 692 280,1 692 280,1 945 211,6 945 207,4 2,376 704,7 2,379 668,5 460 122,0 460 102,8 393 47,4 393 47,4 393 4549,2 10,942 4,413,6 1,132 650,2 1,141 662,0	59 2,050,885 317,665 309,783 64 212,162 99 208,690 88 748,135 705,807 01 128,806 109,116 92 51,264 4,983,508 81 4,983,508 14,746,360 1715,410	163,651 164,233 39,418 38,970 2,917 2,475 16,308 14,331 4,599 3,553 13,888 10,041 371,741 330,732 72,792 73,391	54,247 50,661 7,554 7,189 6,016 5,483 72,477 20,128 3,664 3,061 631 132,798 122,438 16,956 16,300	64.8 63.7 60.3 61.4 64.8 65.7 61.5 60.3 64.5 64.5 65.7 56.5 57.5 63.6 64.6 61.2 62.6	3,381,304 3,138,511 495,190 457,002 350,560 314,182 1,437,898 1,276,911 278,209 224,347 40,862 38,732 8,708,714 7,854,971 1,156,655 1,095,997	1,627,925 1,507,593 242,776 218,894 163,541 147,738 661,765 587,584 148,139 118,470 16,598 14,972 4,066,716 3,701,206 537,300 561,081	983 1,053 234 245 131 124 349 325 72 82 42 44 2,573 2,754 413	269 286 41 33 31 41 86 99 17 11 13 794 743 81	21.5 21.4 14.8 11.8 19.0 24.7 19.8 23.4 20.9 17.6 20.3 22.9 23.6 21.2 17.7 14.9	132 229 33 45 60 45 78 53 179 432 79 113
Pocahontas Region:	2,601 1,164,3 2,558 996,1 2,231 825,7 2,231 739,9	75 1,076,831 24 1,003,126	35,108 28,553 30,319 29,206	36,677 30,016 26,737 22,335	56.9 58.5 59.6 60.8	2,966,739 2,252,833 2,126,893 1,681,007	1,618,784 1,217,890 1,137,427 874,961	482 443 572 569	98 96 83 115	17.0 17.8 12.7 16.8	28 44 148 179
Southern Region: Atlantic Coast Line	4,889 872,11 4,865 890,21 1,907 358,8 1,907 309,0 6,225 1,846,2 5,026 1,753,9 3,755 607,53 3,755 607,53 3,6840 1,513,1 6,820 1,508,40	899,570 360,713 310,057 4 1,859,811 7 1,753,315 4 1,860,826 1,858,287 617,641 1 565,997 8 1,546,125	13,477 14,698 5,004 5,215 39,452 39,072 66,338 67,141 14,611 7,181 37,384 33,018	22,827 21,919 7,429 6,484 52,992 47,729 34,431 51,597 14,838 12,969 34,782 33,702	62.2 62.7 67.4 70.3 62.9 62.6 60.5 61.3 62.1 63.9 63.2 65.4	1,263,614 1,142,502 417,594 343,322 3,294,015 2,886,003 2,303,502 2,023,673 841,239 715,096 1,949,395 1,863,542	481,536 431,900 183,802 152,454 1,359,264 1,154,974 1,098,346 938,407 318,744 271,090 761,814 749,568	368 393 144 140 780 749 615 625 227 229 870 850	62 56 14 19 99 146 105 94 33 29 102 117	14.4 12.6 9.1 11.9 16.3 14.6 13.0 12.6 11.1 10.5	20 33 25 9 88 64 40 50 1 6 73 15
1924 Chic., St. F., Minn. & Om. 1925 1924 Great Northern	8,463 1,323,0 8,463 1,447,7 11,202 1,468,5 10,983 1,387,8 1,726 305,1 8,253 733,3 8,252 742,1 4,372 494,50 4,374 497,7 6,440 757,3 6,440 757,3 6,440 757,3 6,440 200,55	1,485,347 1,546,018 8 1,433,508 7 307,597 7 329,934 7 759,165 8 766,586 9 506,807 7 507,147 4 790,226 9 739,374 192,131	22,456 18,910 74,014 61,670 12,107 13,222 41,284 38,620 5,229 6,317 40,520 38,836 16,229 16,962	33,143 32,596 43,707 39,590 5,788 5,895 27,242 25,220 12,806 11,676 25,318 22,387 5,075 5,262	64.0 61.4 66.5 67.6 67.5 68.6 65.5 69.0 66.1 71.5 74.0 72.8 73.3	1,842,451 1.864,220 2,436,091 2,165,878 305,558 315,432 1,624,678 1,523,886 657,657 615,758 1,378,195 1,180,165 274,282 286,954	732,127 747,821 1,062,754 964,041 123,113 131,479 805,628 757,527 292,827 270,552 630,406 546,619 123,297 134,117	751 820 944 942 159 175 580 614 297 287 521 553 139 141	199 237 182 174 39 31 167 161 45 56 165 150 26 23	20.9 22.5 16.1 15.6 19.8 15.2 22.3 20.8 13.0 16.3 24.1 21.3 15.5 14.1	148 91 158 133 2 1 131 142 29 15 95 116 21
P. & S. F	10,045 1,438,96 9,899 1,511,16 1,022 267,40 1,010 322,21 9,323 1,365,35 9,335 1,405,52 7,578 1,361,12 2,577 194,06 2,599 204,22 2,364 266,90 2,364 266,90 2,364 269,90 2,444 3,354,25 8,478 1,354,25 704,31 3,715 716,88	8 1,587,901 2 303,877 307,915 0 1,413,325 1,448,412 0 1,422,272 4 1,395,717 4 236,110 4 247,753 268,104 5 278,507 0 1,579,152 1,487,960 1 721,846	81,990 71,824 6,117 4,176 53,462 50,616 14,901 12,343 43,094 43,436 17,989 20,053 243,990 236,215 36,765 28,750	44,887 43,184 7,205 7,579 40,301 39,778 32,414 30,323 5,465 5,029 7,057 7,099 42,424 38,768 8,768 8,901 27,393	67.4 64.5 62.6 62.7 63.5 64.2 64.2 64.2 62.4 72.1 72.1 72.1 72.1 72.5 69.0 63.7 64.7	2,518,519 2,488,542 429,337 458,772 2,331,736 2,305,213 1,795,900 1,722,598 501,412 285,471 397,012 407,795 2,536,746 2,317,618 1,445,689 1,380,694	966,140 923,790 172,708 191,315 1,036,571 1,024,795 705,233 675,354 145,084 143,197 182,575 185,202 1,013,798 939,177 588,393 590,178	\$24 798 138 132 819 798 572 266 253 185 200 719 731 468 445	158 144 18 203 217 154 213 35 77 29 26 210 198 72 67	16.1 15.3 11.7 15.1 20.0 21.3 27.6 11.6 23.4 13.6 11.7 22.6 21.3 13.3 13.0	247 213 39 27 131 78 57 30 88 85 66 56 74 136 233 163
Southwestern Region: Gulf, Colo. & S. Fe	1,897 274,50 1,897 245,82 1,787 225,248 1,389 179,58 1,389 167,22 7,278 1,298,96 4,683 882,77 4,683 883,94 4,434 713,43 4,394 762,01 1,953 288,24 1,953 287,51	55 256,166 230,815 232,854 1 190,280 1 172,254 5 1,343,207 1,174,401 907,185 861,357 861,357 769,209 9 288,342	5,417 6,421 1,680 4,332 4,263 1,167 40,373 33,168 14,142 16,220 5,559 9,622 1,800 2,025	7,753 6,548 8,055 7,852 4,680 3,907 36,161 30,431 19,017 17,651 15,456 16,166 7,062 6,957	62.1 64.5 60.9 60.6 60.3 59.9 66.6 67.6 62.2 63.9 61.6 64.2 62.9 64.9	486,164 386,457 467,254 450,033 282,136 230,775 2,091,557 1,719,798 1,118,979 1,006,763 914,252 948,932 406,878 374,133	211,714 165,452 182,255 174,870 113,851 88,004 935,306 770,516 452,814 416,949 375,054 400,435 151,233 145,577	107 118 115 136 134 101 527 435 428 421 262 279 155 163	22 23 17 51 28 24 104 189 66 75 66 56 38 37	17.0 16.2 12.7 27.1 17.1 18.8 16.5 30.3 13.3 15.1 20.1 16.8 19.5 18.4	9 15 47 62 70 39 13 27 35 59 30 23 16 31

1924 1,953 286,042 287,515 287,515 2,025 6,957 64.9 374,133 145,577 163 37 18.4 31

1No passenger-train service. Includes Franklin & Abbeville, Galveston, Harrisburg & San Antonio, Houston & Shreveport, Houston & Texas Central, New Orleans.

25,

Compared with May, 1924, for Roads with Annual Operating Revenues above \$25,000,000

Per cents			Average number of freight cars on line daily				Gross		•		Net ton-		Pounds of coal per L	Locomo-
Brown rank and years Brown				I		t								miles
Bossin & Malanes	Region, road and year	Home	Foreign		ervice		locomotive	per	loaded	per	per	of road	locomotive	locomo-
Bosset	Roston & Albany1925	2,865	5,489	8,354	2.7		1,064	403	19.2	392	26.6	8,214	183	68.7
St. V. Now H. & Blant	Boston & Maine1925	14,696	13,072	27,768	8.3		1,292	528	20.2	315	21.8	3,729	136	46.1
Central Lake Relation 1925 6,77	N. Y., New H. & Hartf1925	21,171	19,347	40,518	21.1		1,415	577	20.7	222	15.5	4,691	124	48.3
Dist. Lack. & Western 1938 9,748 0,348 138 1777 976 34.0 613 33.1 1,131 166 66.7 Eris (inc. Chia, & Eris) 1562 1,523 1,523 1,523 1,523 1,524 1,524 1,5	Great Lakes Region: Delaware & Hudson1925	8,677	6,700	15,377	6.9		1,717	• 851	31.6	704	34.2	12,384	169	67.2
Eric (inc. Chic. & Eric). 1952 39-039 10-48 57-79° 27 11-589 2-10-68 27 27 27 27 27 27 27 2	Del., Lack. & Western1925	16,584	7,741	24,325	3.4		1,777	796	24.9	613	35.3	15,054	156	69.6
Leilagh Valley	Erie (inc. Chic. & Erie) 1925	39,025	18,454	57,479	7.0	11,520	. 2,296	1,043	27.0	520	28.8	12,872	124	47.8
Michigan Central 1923 16,779 17,400 23,910 4.5 2,275 750 19.0 16.0 36.9	Lehigh Valley1925	22,287	8,119	30,406	8.1	78	1,847	833	26.6	536	31.0	12,029	147	46.6
New York, Cinetral.	Michigan Central1925	16,770	17,140	33,910	4.5	2,227	1,872	670	19.0	361	30.2	6,705	112	53.9
New York, Chie & St. L., 1923 11,666 10,671 23,575 2.8 4,642 2,716 669 21,13 366 42.2 2,260 1149 69.3 1149 124	New York Central1925	77,104	67,699	144,803	3.9	27,667	2,252	968	25.6	426	26.4	9,542	117	48.0
Pere Marquette 1922 10,406 8,185 18,651 6,7 870 1,481 627 24.4 428 26.8 3,645 113 611. Pitts & Lake Erie. 1925 1,466 6,09 22,465 41 1,593 2,509 1,460 42.1 24.2 86.0 27.1 113 61.1 113	New York, Chic. & St. L. 1925	13,066	10,491	23.557	5.8	4,682	1,716	669	21.1	586	42.2	8,280	114	69.3
Pitts. & Lake Erie.	Pere Marquette1925	10,466	8,185	18,651 19,992	6.7	870	1,451	637	24.4	428	26.8	3.635	113	61.1
Wahash 1925 14,509 24,527 30,800 1,766 702 21,6 620 42,4 6,165 125 58,6 Circural Eastern Region: 15,501 15,501 25,5	Pitts. & Lake Erie1925	16,486	6,079	22,565 23,144	4.4	4,641	2,632	1,570						43.2 42.2
Entineme & Ohio	1924	14,374												
Ceitral of New Jersey	Baltimore & Ohio1925	71,321		103,896		3,233								
Clives, Cn., Chic & St. L., Chic & S	Central of New Jersey 1925	19,096	10.545	29,641	3.7	3,292	1,731	848	32.1	264	13.6	11,314	167	41.9
Cleve, Clin, Chie, & St. L., 1925 20,950 17,574 38,524 5.6 9.661 2.040 939 29.4 524 30.2 80.88 117 56.6	Chicago & Eastern Ill1925	15,385	3,542	18,927	17.3	4,609	1,656	773	27.2	278	15.8	5,582	137	42.8
Elgin, Joliet & Eastern* 1925 10,118 7,550 17,468 8.3 471 2,280 1,214 40,4 273 10,5 10,303 124 47,3	Cleve., Cin., Chic. & St. L 1925	20,950	17,574	38,524	5.6	9,601	2,040	939	29.4	524	30.2	8,983	117	56.6
Pennsylvania System 1922 22,004 3,232 7,126 12 196 860 349 26,38 73 4.9 1,361 291 40,31 201	Elgin, Joliet & Eastern11925	10,118	7,350	17,468	8.3	471	2,280	1,214	40.4	273	10.5	10,393	124	47.3
Pennsylvania System 1923 223,011 81,857 394,868 11,3 31,158 1,273 875 30.6 430 22,1 12,010 126 51,357 11,000 126 51,357 11,000 12,000	Long Island1925	2,094	5,232	7,326	1.2	196	860	349	26.3	73	4.9	1,361	291	40.3
Reading	Pennsylvania System1925	223,011	81,857	304,868	11.3	35,158	1,873	875	30.6	430	22.1	12,010	126	51.3
Pecahentas Region:	Reading1925	26,101	14,309	40,410	2.2	3,231	1,778	904	34.7	469	22.1	16,742	158	55.7
Norfolk & Western 1923 31,906 7,807 41,242 53. 6,043 21,621 1,223 40,6 951 40,0 15,358 121 62,2 52,560 7,807 40,111 37,77 2,659 2,727 1,127 32,500 33,5145 46,0 51,512 52,52 50,523 51,512 52,52 51,512 52,52 51,51	Pocahontas Region:			42,034	4.4		2,548	1,390	44.1		49.4	20,078	101	
Southern Region: 1925 21,447 13,098 35,145 46	Norfolk & Western1925	33,009	7,807	40,816	3.0	2,884	2,576	1,377	42.5	899	35.5	16,453	138	50.9
Central of Georgia. 1924 21,566 12,566 31,007 4.8	Southern Region:													
I. C (inc. Y. & M. V.) 1924 4,064 3,8668 8,832 6.6 1,110 9 22 2.5 5.6 33.6 2,579 148 64.0 Louisville & Nashville. 1925 4,4069 13,941 67,0480 6.4 5,047 1,786 736 22.7 5.6 23 33.6 2,579 148 64.0 Louisville & Nashville. 1925 4,406 13,050 13,00 13,050 13	1924	21,566	12,506	34,072	4.8	****	1,283	485	19.7	409	33.1	2,864	121	65.7
Louisville & Nashville. 1924 47,781 19.663 67,344 5.5 2,547 1,656 663 24,2 552 36.4 6,012 134 64.6 5.6 60,332 4.4 83 1,103 52.5 31.7 585 36.4 7,048 156 86.4 5.4 83 1,103 52.5 31.7 585 36.4 7,048 156 86.4 5.4 83 1,103 52.5 31.7 585 36.4 7,048 156 86.4 5.4 83 1,103 52.5 31.7 585 36.4 7,048 156 86.4 5.4 83 1,103 52.5 31.7 585 31	1924	4,964	3,868	8,832	6.6		1,110	493	23.5	556	33.6	2,579	148	64.0
Seaboard Air Line. 1924 44,928 17,536 62,444 8.7 112 1,154 535 29,7 484 26,5 6,023 163 86,4 1 1,154 516 1924 10,209 9,88 22,017 3.5 1.3,85 525 21.5 467 34.9 2,738 133 78.4 1,154 516 1924 10,209 19,88 8,177 18,386 7.7 1,138 518 21.5 467 31.5 21.5 467 31.5 2,406 135 71.9 1,155 1924 18,507 19,88 88,405 5.7 1,235 40.7 1,2	1924	47,781	19,663	67,444	5.5	2,547	1,656	663	24.2	552	36.4	6,012	134	64.6
Southern Ry. 1924 10,219 8,177 18,396 7.7 . 1,227 486 20.9 475 35.6 2,466 135 71.9 Southern Ry. 1925 34,708 19,249 63,448 6.4 . 2,288 50.7 22.2 414 28.4 3,545 171 52.4 Northwestern Region: 1925 52,188 23,721 75,909 9.7 4,130 1,393 535 22.1 311 22.0 2,791 133 42.2 Chic. & North Western. 1925 52,188 23,721 75,909 9.7 4,130 1,393 535 22.1 311 22.0 2,791 133 42.2 Chic. Milw. & St. Paul. 1925 54,877 18,777 73,654 9.5 1,659 724 24 24 34 465 28.8 3,660 141 46.4 2 Chic., St. F., Minn. & Om. 1925 54,557 12,724 8 9.5 1,659 724 24 24 23 4465 28.8 3,660 141 46.4 2 Chic., St. F., Minn. & Om. 1925 54,557 12,724 8 9.5 1,659 724 24 24 22 24 24 25 22.6 2,500 144 46.2 Chic., St. F., Minn. & Om. 1925 54,667 12,024 8 9.5 1,659 724 24 24 22 24 25 22.6 2,500 144 40.2 Great Northern . 1925 46,625 8,580 55,705 9.7 2,216 1,099 29.6 464 23.6 3,149 116 34.6 M., St. P. & S. Ste. M. 1923 19,646 5,508 279 7.4	1924	44,928	17,536	62,464	8.7	112	1,154	535	29.7	484	26.5	6,023	163	86.4
Northwestern Region: Chic. & North Western 1925 Chic. & North Western 1924 Chic. & North Western 1924 Chic. & North Western 1924 Chic. & Northern 1925 Chic. & Northern 1924 Chic. & Northern 1924 Chic. & Northern 1925 Chic. & Northern 1924 Chic. & Northern 1925 Chic. & Chic. & Chic. 1925 Chic. & Chic. 1925 Chic. & Ch	1924	10,219	8,177	18,396	7.7		1,287	486	20.9	475	35.6	2,466	135	71.9
Chic. & North Western. 1925 52,188 23,221 75,009 9.7 4,130 1,303 553 22.1 311 22.0 2,791 133 42.2 Chic., Milw. & St. Paul. 1924 48,977 24,249 73,226 9.1 1,288 317 22.3 320 23.3 2,850 6153 45.9 Chic., Milw. & St. Paul. 1925 54,877 18,777 73,654 9.5 1,659 724 24.3 465 28.8 3,660 141 46.4 46.4 Chic., St. F., Minn. & Om. 1924 54,556 144 75,009 6.6 617 1.6 16.0 16.0 16.0 16.0 16.0 16.0 16.0	1924				5.9	****	1,235	497	22.2	414	28.4	3,545		52.4
Chic, St. F., Minn. & Om. 1925	Chic. & North Western1925		24,249	73,226		4,130	1,288	517	22.9		23.3	2,850		
Great Northern	Chic., Milw. & St. Paul. 1925 1924	54,556	18,777 21,143	73,654 75,699	6.7		1,561	695	24.4	411	25.0	2,832	144	43.2
M., St. P. & S. Ste. M. 1924 46,463 6,424 52,887 7.4 2,053 1,021 30.0 458 23.2 2,961 126 33.5 M., St. P. & S. Ste. M. 1925 19,648 5,015 24,663 7.2 1,210 1,30 592 22.9 382 24.1 2,161 108 42.3 Northern Pacific 1925 36,719 7,986 44,705 6.8 2,237 18.20 832 24.9 453 22.7 1,995 115 48.3 Northern Pacific 1925 36,719 7,986 44,705 6.8 2,237 18.20 832 24.9 453 25.5 3,158 127 39.1 OregWash. R. R. & Nav. 1925 6,032 4,080 10,112 4.5 1,508 678 24.4 414 22.9 2,749 120 35.7 OregWash. R. R. & Nav. 1925 6,032 4,080 10,112 4.5 1,508 678 24.4 33 32 22.1 1,820 186 40.8 Central Western Region: Atch., Top. & S. Fe (incl. 1925 63,076 14,716 77,702 5.5 23,344 1,750 671 21.5 398 27.5 3,103 120 53.3 P. & S. Fe (incl. 1925 56,3078 14,716 77,702 5.5 23,344 1,750 671 21.5 398 27.5 3,103 120 53.3 P. & S. Fe (incl. 1925 55,078 15,213 70,291 8.1 1,776 16,666 646 24.0 387 25.8 5,452 147 64.1 Chicago & Alton. 1924 10,312 4,908 15,220 3.1 4,000 1,424 594 25.2 405 25.6 6,109 148 68.7 Chic., Burl. & Quiney. 1925 55,078 15,213 70,291 8.1 1,776 1,708 759 25.7 475 29.1 3,587 136 46.7 Chic., Rock I. & Pacific. 1925 35,248 18,891 71,417 64. 2,512 1,640 729 25.8 462 27.9 3,541 152 47.6 Chic., Rock I. & Pacific. 1925 35,248 18,891 71,417 64. 42,512 1,640 729 25.8 462 27.9 3,541 152 47.6 Chic., Rock I. & Pacific. 1925 35,849 17,865 53,714 10.6 10,379 1,287 49.3 22.3 397 28.7 2.854 164 59.0 Denver & R. G. Wn. 1925 12,355 2,391 14,894 5.6 4,682 1.553 24.8 12.8 410 29.3 3,002 148 63.8 Southern Pac. (Pac. Sys.) 1924 13,369 2,842 16,211 6.4 5,379 1,389 7,11 694 22.2 38.8 462 27.9 3,541 152 47.6 Chic., Burl. & Pacific. 1925 30,389 3,828 11.8 19.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	1924	3,457	8,567	12.024	8.3	589	1.034	431	22.3	353	23.1	2,457	143	53.8
Northern Pacific	1924	46,463	6,424	52,887	7.4		2,053	1,021	30.0	458	23.2	2,961	126	33.5
OregWash. R. R. & Nav. 1925 6.032 4.080 10,112 4.5 1,508 678 24.3 392 22.1 1,120 186 40.8 1925 6.032 4.080 10,112 4.5 1,508 678 24.3 392 22.1 1,120 186 40.8 1925 6.032 4.080 10,112 4.5 1,508 678 24.3 392 22.1 1,120 186 40.8 40.8 1925 6.057 4,345 9,420 4.0 1,431 669 25.5 459 24.6 1,985 181 44.5 14.5 14.5 14.5 14.5 14.5 14.5 14.	1924	18,990	5.989	24,979	7.6	1,496	1,237	544	23.2	348	22.7	1.995	115	48.3
Central Western Region: Atch., Ton. & S. Fe (incl. 1925 65,075 4,345 9,420 4,0 1,431 669 25.5 459 24.6 1,985 181 44.5 P. & S. F 1924 56,658 14,971 71,629 5.5 23,344 1,750 671 21.5 398 27.5 3,103 120 53.3 P. & S. F 1924 56,658 14,971 71,629 7.1 16,286 1,647 611 21.4 416 30.2 3,010 129 56.8 Chicago & Alton. 1925 10,775 3,553 14.328 4.2 2,000 1,606 646 24.0 387 25.8 5,452 147 64.1 Chic., Burl. & Quiney. 1925 55,078 15,213 70,291 8.1 1,776 1,708 759 25.7 475 29.1 3,587 136 46.7 Chic., Rock I. & Pacific 1925 55,078 15,213 70,291 8.1 1,776 1,708 759 25.7 475 29.1 3,587 136 46.7 Chic., Rock I. & Pacific 1925 35,840 18,787 54,627 10.9 11,054 1,319 518 21.8 410 29.3 3,002 148 63.8 Denver & R. G. Wn. 1925 12,355 2,539 14,894 5.6 4,682 1,553 748 26.5 314 16.3 1,816 196 29.9 Denver & R. G. Wn. 1925 12,355 2,539 14,894 5.6 4,682 1,553 748 26.5 314 16.3 1,816 196 29.9 Oregon Short Line. 1925 7,961 3,398 11,359 6.2 1,549 71,287 71,285 22,529 14,285 21,285 22,529 14,294 7,961 3,398 11,359 6.2 1,528 694 26.1 52.5 22,529 22,528 13.5 1,777 197 28.5 Southern Pac. (Pac. Sys. 1924 20,638 7,588 28,226 11.3 8,393 11,711 694 24.2 25.9 445 23.9 2,409 129 43.2 Union Pacific 1925 20,996 8,273 29,269 13.0 2,053 823 21.5 674 40.4 5,125 139 47.7 MoKansTex. 1924 6,774 4,219 10,993 3.2 638 1,572 673 25.3 460 29.7 2,813 116 60.2 48.8 410 24.2 25.3 30.8 27.2 2.8 31.5 710 24.1 11.3 11 3.8 2,585 10.173 12.3 4,145 13.8 2,585 10.173 12.3 4,145 13.8 2.8 5.1 12.3 11.9 150 60.2 5.5 5.5 12.5 12.5 12.5 12.5 12.5 12.5	1924	34,575	7.880	42,455	7.4	1,817	1,660	769	24.4	414	22.9	2,749	120	35.7
Atch., Top. & S. Fe (incl. 1925 63,076 14,716 77,792 5.5 23,344 1,750 671 21.5 398 27.5 3,103 120 53.3 P. & S. F 1924 56,688 14,971 71,629 7.1 16,286 1.647 611 21.4 416 30.2 3,010 129 56.8 Chicago & Alton 1925 10,775 3,553 14,328 4.2 2,000 1.466 646 24.0 387 25.8 5,452 147 64.1 1924 13,131 24 10,312 4,908 15,220 3.1 4,000 1.424 594 25.2 405 25.6 6,109 148 68.7 Chic., Burl. & Quincy 1925 55,078 15,213 70,291 8.1 1,776 1.708 759 25.7 475 29.1 3,587 136 46.7 Chic., Rock I. & Pacific 1924 52,86 18,591 71,417 6.4 2,512 1,640 729 25.8 462 27.9 3,541 152 47.6 Chic., Rock I. & Pacific 1925 35,840 18,787 54,627 10.9 11.054 1.319 518 21.8 410 29.3 3,002 148 63.8 124 124 124 124 124 124 124 124 124 124	1924													
Chicago & Alton. 1925 10,775 3,553 14,328 4,2 2,000 1,606 646 24,0 387 25.8 5,452 147 64.1 1924 10,312 4,908 15,220 3.1 4,000 1,424 594 25.2 405 25.6 6,109 148 68.7 Chic., Burl. & Quiney. 1925 55,678 15,213 70,291 8.1 1,776 1,708 759 25.7 475 29.1 3,587 136 46.7 Chic., Rock I. & Pacific. 1925 35,840 18,787 54,627 10.9 11,054 1,319 518 21.8 410 29.3 3,002 148 63.8 1924 35,849 17,865 53,714 10.6 10,379 1,257 493 22.3 397 28.7 2,854 164 59.0 Denver & R. G. Wn. 1925 13,555 2,539 14,894 5.6 4,682 1,553 748 26.5 314 16.3 1,816 196 29.9 1924 13,369 2,842 16,211 6.4 5,379 1,758 701 28.5 285 13.8 1,777 197 28.5 Couthern Pac. (Pac. Sys.) 1924 7,961 3,398 11,359 6.2 1,528 694 26.1 526 29.2 2,528 135 14.6 2.3 1924 26,681 29,660 56,341 5.8 8,393 1,711 694 24.2 538 34.2 3,573 133 59.9 Union Pacific 1925 20,996 8,273 29,269 13.0 2,053 835 20.4 647 41.8 5,147 117 45.3 116 60.2 MoKansTex. 1924 20,638 7,588 28,226 12.3 1,926 823 21.5 674 40.4 5,125 139 47.7 Southwestern Region: Gulf. Colo. & S. Fe. 1925 9,370 4,141 13,511 3.8 2,583 1,771 694 22.5 29.9 2.5 29.9 20.7 2,813 116 60.2 MoKansTex. 1924 9,913 5,427 11,340 4.1 2,559 1,936 752 22.3 368 27.2 3,157 102 41.1 38.9 1924 29,630 56,758 28,261 12.3 1,926 823 21.5 674 40.4 5,125 139 47.7 Southwestern Region: Gulf. Colo. & S. Fe. 1925 9,370 4,141 13,511 3.8 2,583 1,771 694 22.5 29.9 20.7 2,813 116 60.2 10.2 10.2 10.2 10.2 10.2 10.2 10.2 1	Atch., Top. & S. Fe (incl. 1925			77,792 71,629			1.647							
Chie., Burl. & Quincy	Chicago & Alton1925	10,775	3,553	14.328	4.2	2,000	1,606	646	24.0	387	25.8	5,452	147	64.1
Denver & R. G. Wn. 1924 13,369 2,842 16,211 6.4 5,379 1,898 701 28.5 314 16.3 1,816 196 29.9 19.24 13,369 2,842 16,211 6.4 5,379 1,398 701 28.5 285 13.8 1,777 197 28.5 Oregon Short Line. 1925 9,357 3,823 13,180 4.5 1,549 712 25.9 445 23,9 2,409 129 43.2 Southern Pac. (Pac. Sys.) 1925 30,586 32,086 62,672 5.6 8,290 1,758 702 23,9 521 34.1 3,840 131 63.3 194 26,681 29,660 56,341 5.8 8,393 1,711 694 24.2 538 34.2 3,573 133 69.9 Union Pacific 1925 20,996 8,273 29,269 13.0 2,053 835 20.4 647 41.8 5,147 117 45.3 Southwestern Region: Gulf, Colo. & S. Fe. 1925 9,370 4,141 13,511 3.8 2,583 1,771 771 27.3 503 29.7 3,600 107 72.5 Gulf, Colo. & S. Fe. 1925 8,632 3,768 12,400 4.6 3,406 2,048 799 22.6 470 34.1 3,290 93 57.0 MoKansTex. 1925 241 11,669 11,910 8.2 3,208 10,151 1,910 8.2 3,208 1,571 634 24.3 298 20.5 2,644 111 38.9 Missouri Pacific 1924 30.8 9,865 10,173 12.3 4,154 1,380 527 22.5 24.8 138 4.75 29.40 140 62.5 St. Louis-San Francisco 1924 28,565 16,567 45,132 8.8 1,476 661 25.3 551 32.2 3,404 140 62.5 Southern Pacific Lines (in 1925 11,472 15,000 26,472 7.8 5,584 12.8 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 70.9 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 70.9 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.7 2,940 121 75.0 Tex. and La.)2 1924 9,883 15,577 25,460 6.1 3,605 1,245 525 24.8 507 31.	1924		18,591	71,417	6.4	2,512	1,640	729	25.8	462	27.9	3,541	152	47.6
Oregon Short Line. 1925	1924	35.849	17,865	53,714	10.6	10,379	1,257	493	22.3	397	28.7	2,854	164	59.0
Southern Pac. (Pac. Sys.) 1925 30,586 32,086 62,672 5.6 8,290 1,758 702 23.5 521 34.1 3,840 131 63.3 1924 26,681 29,660 56,341 5.8 8,393 1,711 694 24.2 538 34.2 3.573 133 59.9 1,758 702 23.5 521 34.1 3,840 131 63.3 1924 26,681 29,660 56,341 5.8 8,393 1,711 694 24.2 538 34.2 3.573 133 59.9 1,758 1924 20,638 7,588 28,226 13.0 2,053 835 20.4 647 41.8 5,147 117 45.3 47.7 45.3 47.7 45.3 47.7 47.7 47.7 47.8 47.7 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8 47.7 47.8	1924	13,369	2,842	16,211	6.4	5,379	1,398	701	28.5	285	13.8	1,777	197	28.5
Union Pacific	1924	7,961	3,398	11,359	6.2		1,528	694	26.1	526	29.2	2,528	135	42.6
Southwestern Region: Gulf, Colo. & S. Fe. 1925 9,370 4,141 13.511 3.8 2,583 1,771 771 27.3 503 29.7 3,600 107 72.5 Gulf, Colo. & S. Fe. 1925 8,632 3,768 12.400 4.6 3,406 2,048 799 22.6 470 34.1 3,290 93 77.0 MoKansTex	1924	26,681	29,660	56,341	5.8	8,393	1,711	694	24.2	538	34.2	3.573	133	59.9
Gulf, Colo. & S. Fe	1924													
MoKansTex. 1925 8,632 3,768 12,400 4.6 3,406 2,048 799 22.6 470 34.1 3,290 93 57.0 1924 9,883 15,577 25,460 6.1 3,605 1,245 2.2 1,407 2.2 1,249 1924 9,883 15,577 25,400 1924 1,1669 1,930 1,245 2.2 1,157 102 41.1 1,100 1924 1,100 1925 11,472 15,000 26,472 7.8 5,584 1,281 525 24.3 268 4,138 125 70.7 12.3 12.3 12.3 12.3 12.3 12.3 12.3 12.3	Gulf, Colo. & S. Fe1925				3.8									
Mo. Kans. Tex. of Tex. 1925 241 11.669 11.910 8.2 3.208 1.571 634 24.3 298 20.5 2.644 111 38.9 1924 308 9.865 10.173 12.3 4.154 1.380 527 22.5 279 20.7 2.046 120 44.8 120 120 120 120 120 120 120 120 120 120	MoKansTex1925	8,632	3,768	12,400	4.6	3,406 2,569	2,048 1,936	799	22.6 22.3	470 368	34.1 27.2	3,290	93	57.0
Missouri Pacific	MoKansTex. of Tex1925	241 308	11,669 9,865	11,910 10,173	8.2 12.3	3,208	1,571	634 527	24.3 22.5	298 279	20.5	2,644 2,046	111 120	38.9 44.8
St. Louis-San Francisco. 1925 20,299 10,403 30,702 5.0 1,069 1,268 513 23.8 475 32.1 3,119 150 60.1 1924 21.619 11,062 32,681 5.0 1,039 1.193 494 23.6 411 27.2 2,872 162 57.1 Southern Pacific Lines (in 1925 11,472 15,000 26,472 7.8 5,584 1,281 526 24.3 455 30.4 2,729 112 70.9 Tex. and La.) ^a	Missouri Pacific1925	30,472 28,565	17,154 16,567	47,626 45,132	9.2 8.8		1,476	661	25.3	551	32.2	3,404	125 140	70.7 62.5
Tex. and La.)*	1924	20,299 21.619	10,403 11,062	32,681	5.0	1,039	1,193	494	23.6	411	27.2	2,872	162	57.1
	Tex. and La.)21924	9.883	15,577	25,460	6.1	3,605	1,245	525	24.8	507	31.7	2,940	121	75.0
Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.	1924	5.972	4.930	10.902	9.5		1,301	506						

enues (per cent).

General News Department

(Continued from page 197) *

hand September 1, 1924. As a matter of fact, stocks are never evenly divided and the figures of days' supply are presented for comparative purposes only. It is a well known fact that in every community there are many who habitually carry very small or even no reserves and others who carry stocks above the average.

In addition to the quantity in the storage piles of consumers and dealers, it is estimated that the following quantities were in transit on June 1: On the commercial docks of Lakes Superior and Michigan, 3,800,000 tons; in storage at the mines or at intermediate points, 150,000 tons.

Retail dealers in anthracite had a 52 days' supply of that fuel on June 1, an increase of 11 per cent over the supply on March 1, and slightly more than that on June 1, 1924. movement of anthracite in the Lake trade began early this season and as a result the total on the upper Lake docks now stands close to 1,000,000 tons.

Reports from the railroads, furnished through the courtesy of the American Railway Association, indicated that the total railroad fuel in reserve was in the neighborhood of 10,500,000 tons, a supply sufficient to last 32 days at the present rate of consumption. A year ago the railroads had a 50 days' supply,

An interesting feature of the report is the steady reduction of the stocks accumulated during 1923. The liquidation of the near-record reserves of January 1, 1924, has now gone on steadily for a year and a half, and the total stocks on June 1 were lower than any on record for a normal corresponding date. The reserves on that date were not quite twice those of June 1, 1920, when an acute shortage resulted in a panicky market with runaway prices. Compared with other corresponding dates, the stocks on June 1, 1925, were 25 per cent less than on June 1, 1924, 10 per cent less than on June 1, 1923, and they were 4 per cent less than on April 1, 1921, two months earlier in the season.

The reports from consumers, supplemented by information from other sources, indicate that the rate of soft coal consumption-including exports-from March 1 to May 31, 1925. was at the rate of approximately 1,250,000 tons a day, or 8,750,000 tons per 7-day week. During the preceding six months, September 1, 1924, to March 1, 1925, the average daily rate of consumption was about 1,480,000 tons.

OFERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM ROADS IN THE UNITED STATES

(FOR 191 STEAM ROADS, INCLUDING 16 SWITCHING AND TERMINAL COMPANIES)

FOR THE MONTH OF MAY, 1925 AND 1924 Eastern District Pocahontas Region United States Southern Region Western District 1925 1924 1925 1925 1924 1925 1924 1924 1925 Item 1924 number of miles 59.478.74 59.551.00 5,503.84 5,505.32 38,526.18 38.334.82 133.156.98 236.665.74 236.086.70 132,695,56 \$164,956,940 \$156,348,924 \$17,836,706 \$15,071,820 \$49,327,106 \$41,378,233 \$41,961,459 \$1,792,650 \$2,000,936 \$11,139,747 \$3,091,376 \$3,121,652 \$200,683 \$236,182 \$1,155,501 \$5,688,730 \$5,425,347 \$266,738 \$276,396 \$2,026,679 \$9,845,425 \$9,277,697 \$195,883 \$196,173 \$847,509 \$5,087,708 \$5,295,991 \$363,994 \$331,538 \$1,155,264 \$351,274 \$344,961 \$18,586 \$12,666 \$144,748 \$12,666 \$144,748 \$1,266 \$144,748 \$144,748 \$146,7 \$344,787,358 b 85,617,764 8,268,609 12,391,284 15,871,731 10,039,245 782,867 230,194 \$47,937,807 \$127,049,091 \$359,169,843 \$125,428,807 \$156,348,924 41,961,459 3,121,652 5,425,347 9,277,697 5,295,991 344,961 122,711 221,653,320 82,004,130 8,038,937 12,020,440 16,572,817 27,693,500 3,591,377 4,038,293 11,416,665 11,416,665 1,178,899 2,009,746 889,375 1,045,465 123,318 Mail Mail
Express
All other transportation
Incidental 9,845,425 5,087,708 351,274 103,057 10.276.024 3,669,058 295,202 1,661 20,673,579 1,622 31,479 65,765,075 29,503 477 528 664 230, 296, 629 171.947.995 173, 179, 483 Expenses: Maintenance of way and Maintenance of structures 72,973,734 Maintenance of equip't. 103,381,435 Traffic 8,915,353 173,304,439 294,063 2,735,537 4,521,129 208,001 5,649,196 90,418 435,818 28,811,960 49,402,437 3,155,944 84,743,713 29,745,347 35,223,777 3,834,880 62,040,609 2,836,957 5,172,094 241,770 5,672,565 32,930,430 37,522,697 3,701,060 63,104,345 104,911,270 8,494,922 177,219,035 13,416,106 1.558,050 23,140,703 472,966 1,866,646 13,465,007 1,429,917 23,721,781 4,284,963 14,506,303 4,092,422 14,302,589 1,969,093 1,986,913 389,739 1,871,171 1,753,952 5,746,634 1,625,352 5,823,605 1,322,669 381,485,741 148.967 173,412,216 243,776 50,242,456 117,153 50,070,707 866,512 143,840,977 estment-Cr. Ry. operating expenses. revenue from railway 47,680,348 11,735,474 154,559 35,790,315 3,884,875 6,273,061 1,268,458 3,482 5,001,121 d 390,968 4,523,004 1,201,371 3,539 3,318,094 d 243,733 14,501,065 3,328,309 19,136 11,153,620 543,007 29,338,506 28,690,266 172,742 84,065,085 6,115,832 11,022,755 57,275 23,167,970 1,997,264 250,846 68,133,545 5,401,424 1,802,589 60,929,532 91,085 43,990,252 3,657,309 73,612 17,871,516 1,217,280 730,995 2,092,019 75,857,234 1,048,842 39,284,101 894,652 31,010,788 78,331 3,483,501 10,943,569 10,512,002 20,322,139 15,923,241 76.89 79.89 75.30 78.49 69.66 77.54 80.08 83.06 FOR FIVE MONTHS ENDED WITH MAY, 1925 AND 1924 Average number of miles operated 59,492.55 59,524.65 5,502.18 5,502.71 38,510.68 236,649,82 236,043,85 38,335,26 133,144,41 132,681.23 78,932,227 251,997,595 10,191.811 62,262,377 1,021,374 5,738,102 1,320,487 8,739,811 971,077 4,890,630 619,798,761 154,156,161 18,027,256 22,752,595 27,511,035 15,434,101 245,910,291 63,730,087 5,696,471 8,820,233 800,955,623 792,170,786 Freight 792,170,780 198,336,417 15,417,715 27,621,368 45,933,962 23,782,014 1,921,861 506,782 78,932,227 10,191.811 1,021,374 1,320,487 971,077 1,671,168 72,514 e 433,095,982 40,209,275 59,050,518 9,319,623 1,056,097 1,383,615 136.260,917 17,985,564 19,819.500 27,619,264 Passe Mail 406,179,334 40,197,478 57,564,294 79,439,979 47,600,059 4,288,757 other transportation. 996,123 1,712,873 80,481 All 78,149,914 47,146,664 6.291,974 672,648 1,613,762 10,031 171,365 94,170,627 340,421,772 372,211 845,229,507 358,553 98,089,115 334,873,824 859.335.964 Expenses: Maintenance of way and 313,550,560 526,743,113 42,599,886 891,470,744 20,961,279 72,085,925 132,854,571 254,845,709 15,774,801 422,264,414 9,787;591 31,888,822 311,248,335 543,065,450 40,449,936 929,652,835 20,159,325 70,656,400 13,662,861 23,943,731 1,123,820 28,910,451 457,985 13,365,950 46,709,133 23,488,410 65,559,227 1,008,083 7.692,677 30,642,167 120,423,617 ntenance of eg'pm't. 262,441,851 15,193,685 446,738,486 9,761,915 31,274,634 67,620,870 7,228,374 123,618,003 182,394,446 18,008,588 319,872,262 189,514,319 17,019,794 328,654,179 7,742,652 436,177 2,162,165 2,765,463 9,253,234 2,218,581 9,133,081 7,742,652 28,086,520 2,325,512 28,618,357 2,762,640 674,405,248 4,478,258 5,193,543 .1,862,933,249 1,910,038,738 829,059 891,807,009 179,859 70,244,501 123,460 815.381 70,979,492 251,587,970 3,632,586 693,099,867 608,438 720,378 866,695,530 226,488,152 53,766,575 453,176 172,268,401 18,671,215 3,881,791 149,715,395 80,721,454 17,036,289 78,603 63,606,562 3,C61,978 525,484,486 139,616,428 237,981,811 56,883,236 170.824,259 57,224.090 273,104 113,327,065 496,636,838 27,844,614 23,191,135 ^8.833,802 166,236,097 56,334,130 394,970 109,506,997 7,701,830 3,343,126 98,462,041 6,146,132 28,334 21,670,148 d1,968,165 133,051,174 940,822 319.792 180,778,783 940,822 362,644,842 27,980,789 8,115,171 326,548,882 16,788,912 4.224,709 159,765,162 464,392 23,173,921 3,901,713 98,894,065 60,128,018 78.00 79.36 78.46 79.75 71.61 75.37 75.89 79.79 80,66

a Includes \$3,017.093 sleeping and parlor car surcharge. b Includes \$2,922,322 sleeping and parlor car surcharge. c Includes \$14,828,061 sleeping and parlor car surcharge. d Deficit or other reverse items. e Includes \$14,301,775 sleeping and parlor car surcharge. (Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.)

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Traffic News

Farm bureaus in 22 states are preparing to oppose the petition of the western railways for a general increase in freight rates, according to an announcement by the American Farm Bureau Federation.

The twelfth meeting of the Northwest Regional Advisory Board was held at Duluth, Minn., on July 21. Particular attention was given to the securing of the co-operation of every agency connected with the handling of this season's grain crop, which is expected to begin to move about August 15, reaching a peak about September 1.

An injunction against the Public Service Commission of Oregon, obtained by the Oregon-Washington Railroad & Navigation Company and other railways in Oregon, in which the commission was restrained from reducing freight rates 15 per cent on grain, grain products, potatoes, onions and straw, was dissolved by the circuit court at Salem, Ore., on July 14.

The Chicago & Alton on its Midnight Special between Chicago and St. Louis, now runs a "DeLuxe Lounge Car." It differs from the ordinary club car in that it contains private rooms where groups can meet in complete comfort for business, sociable games or conversation. There is also a lounge and a dining section seating 18 persons. The cars contain no fixed seats.

Continuing its program of making drastic cuts in its passenger train service where economically necessary, the Illinois Central has applied to the Illinois Commerce Commission and the railroad commissions of Wisconsin and Indiana for permission to discontinue the operation of 18 local passenger trains. The reduction is made necessary by the increasing competition of privately owned automobiles and motor buses.

Through fast freight service between St. Louis, Mo., and Houston, Texas, and Galveston, has been established by the Missouri Pacific, the Texas & Pacific, and the International-Great Northern. The new schedule, southbound, provides for early third morning delivery in Houston and Galveston from St. Louis and reduces the former schedule by 24 hours. Departure from the St. Louis district will be at 6 p. m.

The annual meeting of the Central Western Regional Advisory Board was held at Boise, Idaho, on July 16 with approximately 220 railway officers and representatives of shippers in attendance. The session was devoted mainly to discussions of committee reports. Addresses were given by H. G. Taylor, president of the Nebraska Railroad Commission, and by M. J. Gormley, chairman of the Car Service division of the American Railway Association.

The Chicago & North Western will construct a 250-car public garage under its tracks north of the Madison street terminal in Chicago for the use of its patrons. The utilization of the space under the elevated tracks from Randolph street to Washington street and from Clinton street to Canal street for this purpose will enable persons, who desire to drive their cars to the station, to store them and have them available on returning from trips over the railroad. There will be no limit to the time a car may be left in the garage. The garage, which will be opened about August 1, will be managed by Eitel Brothers, who operate the restaurants in the station.

C. M. & St. P. Plans Additional Sunday Excursions

The success of an excursion run from the Twin Cities to Chicago on July 12 by the Chicago, Milwaukee & St. Paul has prompted this road to announce additional excursions. The Twin Cities excursion carried 1779 passengers in three sections of day coaches at a fare of \$7 for the round trip. The excursions now announced by this road to be run during July will be from Milwaukee, Wis., to Cedarburg on July 18; from Omaha, Neb., Sioux Falls, S. D., and Sioux City, Iowa, to Chicago on July 18; from Monte-

video, Minn., to Minneapolis, Minn., on July 19; from Perry, Iowa, to Omaha, on July 19; from Des Moines to Spirit Lake, Iowa, on July 19; from Milwaukee to Madison, Wis., on July 19; from Milwaukee and Beloit, Wis., to Camp Douglas, on July 19; from Green Bay, Wis., to Milwaukee, on July 19; from Chicago to Star Lake, Wis, and to Boulder Junction, on July 25-26; from Minneapolis to Chicago on July 25-26; from Chicago to Milwaukee on July 26; from Milwaukee to Kilbourn, Wis., on July 26, and from Mason City, Iowa, Austin, Decorah, Janesville, Wis., and Richland Center to Marquette, Iowa, and thence by boat to Guttenberg on August 2.

Freight Traffic in May

Freight traffic handled by the railroads in May amounted to 37,146,760,000 net ton miles, according to reports for the month filed by the carriers with the Bureau of Railway Economics. Compared with the corresponding period last year, this was an increase of 3,231,618,000 net ton miles, or 9.5 per cent, but it was a decrease of 2,450,885,000 net ton miles, or 6.2 per cent as compared with the corresponding period in 1923.

Freight traffic in the Eastern district showed an increase of 11 per cent, while in the Southern district there was an increase of 12.3 per cent. The Western district showed an increase of 6.3 per cent.

For the first five months in 1925, the volume of freight traffic amounted to 176,654,923,000 net ton miles, an increase of 2.3 per cent as compared with the corresponding period last year, but a decrease of 5.8 per cent as compared with the corresponding period in 1923. In the Eastern district there was an increase for the five months period of 1.8 per cent as compared with the same period last year, and in the Southern district an increase of 4.1 per cent. The Western district reported an increase of 2.1 per cent.

The daily average movement per freight car in May was 27.3 miles, an increase of 1.5 miles, as compared with May last year, but a decrease of 1.3 miles as compared with the same month two years ago. The average daily movement per freight car in May this year was an increase of 4/5 of a mile, as compared with the preceding month.

The average load per freight car in May was 26.9 tons, onehalf a ton greater than that for May last year, but 1.1 tons under that for the same month in 1923. The average for 'May was an increase of one ton over April, this year.

New Freight Classification in Canada

Judgment regarding proposed Canadian freight classification No. 17, which will supersede No. 16, and supplements thereto was issued last Saturday by the Dominion Railway Board at Ottawa. The new classification, as approved, will be a much larger and more comprehensive volume than the one it supplants, making provision, as it does, for many new articles of commerce and new shipping conditions not now provided for. The work of revision, which was of considerable magnitude and extending over a long period of time, was primarily undertaken by a joint committee representing the carriers and shippers in both Eastern and Western Canada with a view to consideration of both transportation and commercial interests and arriving, as far as possible, at an agreement acceptable to both, leaving the irreducible minimum of items on which agreement was impossible for adjudication by the Railway Board.

Argument on these items was heard by the Board during the

Argument on these items was heard by the Board during the latter part of 1924. Probably the most contentious question was that relating to the so-called "mixing" rule of the classification governing the shipment of different articles in the same car at carload rating between points in Western Canada, and from Eastern Canada to Western Canada and vice versa. At the present time mixing is confined to articles under distinctive trade lists. Application was made for the adoption of a so-called "open" or unrestricted mixing rule. This was strongly opposed by the jobbing and distributing trade in Western Canada, and the judgment of the Railway Board provides for the continuance of the present mixing rule as in effect for the past twenty years. Other items specifically mentioned in the Board's judgment cover various commodities. It is expected that the new classification will become effective about October 1. The judgment covers 130 pages.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has issued a decision in a case instituted by complaint of the Galveston Commercial Association finding the rates on a considerable number of commodities in export, import or coastwise movement via Galveston, Tex., to be unduly prejudicial to Galveston and unduly preferential of New Orleans, La. Bases for nonprejudicial rates are prescribed which include various differentials under the New Orleans rates.

Export Rates on Cotton

The Interstate Commerce Commission has rendered a decision that the present practice of the railroads of applying interstate domestic rates on shipments of cotton delivered to warehouses and compresses at the Gulf ports, where delivery is effected at a point other than ship side, is not illegal, but that the present relationship between the domestic and export rates is unduly prejudicial to warehouses and compresses located at interior points and back from the water front at the ports, and unduly preferential of warehouses and compresses located on the water front. The carriers are directed to readjust their rates so that the export rates will not exceed the domestic rates by more than the wharfage charges. For a number of years the export rates on cotton from Arkansas, Louisiana, Oklahoma and Texas to the Gulf ports have been higher than the domestic rates, the difference representing the approximate average cost of transferring the cotton from the back-from-the-water warehouses or compresses at the ports to ship side.

State Commissions

Illinois Commerce Commission

Decisions Called Illegal

The Supreme Court of Illinois, in a decision signed by Chief Justice Floyd Thompson, has rendered a decision declaring illegal all decisions of the Illinois Commerce Commission concerning only one county where the hearing on a case was held in another county. As the commission meets only in Chicago and Springfield, the invalidation covers most of the routine cases concerning all other counties. A re-hearing of the court order has been asked and, if granted, will be held in October. Until that time the work of the commission in every county except the counties of Cook and Sangamon will be held up. The practice of the commission has been to assign experts, usually employed from the outside, to hear all routine cases in the most convenient of the two cities, Chicago or Springfield. Recently the commission ordered the Cleveland, Cincinnati, Chicago & St. Louis to reduce its freight rate on brick hauled inside Vermilion county, and it was on the railroad's appeal of this case that the decision was rendered by the court.

Court News

Contributory Negligence at Crossing in Failing to Turn on Full Automobile Head Lights

An automobilist and his wife approached a crossing in Scranton in a car equipped with headlights visible for 200 ft., as required by the Pennsylvania statute, but dimmed so as not to dazzle other drivers, as required by a Scranton ordinance. They stopped, looked and listened within 25 ft. of the crossing, in obedience to the law of Pennsylvania. Not seeing or hearing anything, they proceeded to cross and ran into a standing freight obstructing the crossing, without lights. The night was dark and rainy. The Circuit Court of Appeals, Third Circuit, holds, in actions by them for injuries sustained, that in the exercise of ordinary care they should, when they stopped, have turned on the full lights for a moment, and their failure to do so was contributory negligence.—Phillips v. Davis, 3 F. (2d) 798.

Foreign Railway News

Japanese Railways Change to Automatic Couplers

The program for the change from the European style of manual couplers with side buffers to M. C. B. automatic couplers decided upon by the Japanese Government Railways some months ago was carried out without a hitch on July 17. All arrangements were made to change the couplers on all the rolling stock on this date and months of preparation were necessary. The automatic coupler of M. C. B. type will henceforth be standard for the Japanese Government Railways.

London Reported Planning an

Underground Freight Railway

The New York Times reports that an underground freight railway is planned for London and that it will be built by American capital. It is estimated that the line will cost approximately \$25,000,000. It is to be constructed, it is said, because the increasing congestion of the streets of London has added greatly to the cost of transporting freight by ordinary highway vehicles through them.

Southern Railway (England)

Extends Suburban Electrification

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The Southern Railway on July 12 opened an additional 67 miles of line in its London suburban zone to electric operation. Electric operation in this section brought with it greatly improved train service, in a number of instances more than doubling the number of trains. The company has, so far, electrified 248 track miles of its suburban lines and is proceeding with the work on an additional 399 track miles.

New South American

Transcontinental Link in Service

The new line of meter-gage railway from Atocha, Bolivia, to La Quiaca on the Argentine frontier was completed and turned over to the Bolivian government on July 15 by the American contractor. This line, which is 124 miles long, connects the railway systems of Bolivia and Argentina and thus makes possible another all-rail transcontinental journey, heretofore possible only over the Chilean Transandine.

Indian Government Takes Over Two More Railways

The operation of the Great Indian Peninsula and the East Indian has been taken over by the government of India. The latter operates 2,773 miles of line and the former 3,225 miles. This change in management brings the mileage of government-owned railways operated by private companies down to 13,108, as against 13,696 operated by the government itself. By far the greater part of the railways of India were built by the government, but were leased to British companies for operating purposes. In 1921 a committee of experts, headed by Sir William Acworth, which examined into railway affairs in India, recommended that the contracts with private operating companies be not renewed when they expired and it is under this policy that the Great Indian Peninsula and the East Indian have been taken over for state operation under the direction of the Railway Board of India.

British manufacturers generally and of railway equipment and supplies in particular, according to the Times (London) Trade Supplement, have cause to be concerned over the change, because one of the reasons why state operation was restored is said to be the feeling of the Indians that the British companies did not give sufficient encouragement to local industries and were inclined to favor import and export trade and that they did not employ Indians in posts of great responsibility. Under the new conditions it is not felt that the slightest advantage will be given to British equipment manufacturers and that where supplies are needed which cannot be furnished in India, the business will go to the country making the most favorable bid.

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Equipment and Supplies

Locomotives

THE HAWAII SUGAR COMPANY has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

THE WESTON LUMBER COMPANY has ordered one Mogul type locomotive from the Baldwin Locomotive Works.

THE CENTRAL MACARENO, Cuba, has ordered one Consolidation locomotive from the Baldwin Locomotive Works.

THE THUNDER & LAKE LABORATORY has ordered one Consolida-

THE TENNESSEE MACHINERY EXCHANGE, Knoxville, Tenn., is inquiring for one 36-in. gage 35 to 45-ton capacity Shay type locomotive.

THE ST. PAUL BRIDGE & TERMINAL has ordered one eight-wheel switching locomotive from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the Railway Age of June 6.

The Texas & Pacific has ordered 5 Mountain type locomotives from the American Locomotive Company, 10 eight-wheel switching locomotives from the Baldwin Locomotive Works, and 10, 2-10-4 (Texas) type locomotives from the Lima Locomotive Works. This company was reported in the Railway Age of July 18 as inquiring for 25 locomotives. The ten locomotive let to the Lima Locomotive Works are a new type. They are practically duplicates, with the addition of another pair of drivers, of the Lima 2-8-4 two-cylinder design described at length in the May 2, 1925, issue of the Railway Age, which was placed in service on the Boston & Albany. The new locomotives will have two cylinders and a 2-10-4 wheel arrangement and will be known as the Texas type. All of the special features of design incorporated in the 2-8-4 type will also be incorporated in the new locomotives.

Freight Cars

THE MISSOURI-KANSAS-TEXAS is inquiring for 1,000, 40-ft. box cars of 50 tons' capacity.

THE BUFFALO & SUSQUEHANNA is inquiring for 200 steel underframes for box cars.

THE UNITED STATES IRON WORKS is inquiring for 10 all steel flat cars of 50 tons' capacity.

THE SOROCABANA RAILWAY (BRAZIL) is inquiring through the car builders for 10 box cars of 18 tons' capacity.

THE AMERICAN RAILWAY OF PORTO RICO is inquiring for 20 steel gondola cars and 10 steel dump cars, all to be of 20 tons' capacity.

THE UNITED STATES INDUSTRIAL ALCOHOL COMPANY is having repairs made to 80 tank cars, in the shops of the American Car & Foundry Company.

THE MISSOURI PORTLAND CEMENT COMPANY, St. Louis, Mo., has ordered 10 steel hopper cars of 50 tons' capacity, from the American Car & Foundry Company.

THE CERTAIN-TEED PRODUCTS CORPORATION, New York, has ordered one tank car of 50 tons and 10,000 gal capacity, from the American Car & Foundry Company.

THE INTERSTATE PUBLIC SERVICE COMPANY, Indianapolis, Ind., has ordered six 40-ton Hart convertible ballast cars, from the American Car & Foundry Company.

THE FISHER HARD LUMBER COMPANY, Memphis, Tenn., has ordered 40 skeleton logging cars, of 30 tons' capacity, from the American Car & Foundry Company.

THE PHILLIPS PETROLEUM COMPANY has ordered 300 tank cars from the Standard Tank Car Company. Inquiry for from 150 to 250 insulated tank cars was reported in the Railway Age of July 4.

THE PENNSYLVANIA SALT MANUFACTURING COMPANY has ordered from the American Car & Foundry Company, five tank cars of 15 tons' capacity with 40-ton trucks, for carrying liquid chlorine.

THE FRUIT GROWERS EXPRESS has ordered 400 steel underframes from the Pressed Steel Car Company. This is in addition to the 500 previously ordered from the same builder as was reported in the Railway Age of May 16.

Passenger Cars

THE UNITED FRUIT COMPANY is inquiring for four passenger cars of 3 ft. 6 in. gage, for export.

THE ERIE is inquiring for 20 express car underframes and 5 express refrigerator car underframes.

THE MISSOURI PACIFIC is expected to come into the market soon for passenger equipment for 10 complete limited passenger trains to operate between St. Louis, Mo., and San Francisco, Cal.

Iron and Steel

THE St. LOUIS-SAN FRANCISCO is inquiring for 15,000 tons of rails

THE LOUISVILLE & NASHVILLE is inquiring for 800 tons of structural steel.

THE CHICAGO, AURORA & ELGIN is inquiring for 1,200 tons of rail for new line.

THE WABASH has ordered 139 tons of structural steel from the American Bridge Company.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have placed an order for 2,300 tons of rail.

THE RUTLAND has placed an order for 250 tons of steel for bridges, with the Fort Pitt Bridge Company.

THE NEW YORK, CHICAGO & St. Louis has ordered 800 tons of structural steel from the Bethlehem Steel Corporation.

THE NASHVILLE, CHATTANOOGA & ST. Louis has ordered 100 tons of structural steel from the McClintic-Marshall Company.

THE SOUTHERN PACIFIC has given an order to the American Bridge Company for 1,000 tons of steel for a number of bridges.

THE CHICAGO, ROCK ISLAND & PACIFIC has contracted with the McClintic-Marshall Company for 500 tons of steel for track elevation bridges in Chicago.

THE NORFOLK & WESTERN has ordered 27,000 tons of rail from the Carnegie Steel Company and 20,000 tons from the Bethlehem Steel Company, inquiry for which was reported in the Railway Age of July 4.

Machinery and Tools

THE CHESAPEAKE & OHIO has placed an order for a 600-lb. steam hammer.

The New York Central is inquiring for 3, 24-in. motor driven shapers, for its Depew shops.

THE READING COMPANY has placed an order for 4 motor ash pit cranes equipped with two 1½-yd. buckets.

The Atchison, Topeka & Santa Fe has ordered one 30-ton electric traveling crane from the Manning, Maxwell & Moore Shaw Electric Crane Works.

THE MOBILE & OHIO has placed orders for a number of machine tools at a cost of about \$130,000 to include from 8 to 12 lathes,

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shapers, boring tools, plate bending rolls, wheel turning lathes, flue cleaners and grinders.

THE ILLINOIS CENTRAL has ordered one 250-ton gap crane from the Morgan Engineering Company, one 50-ton, four 15-ton, one 20-ton and two 10-ton overhead cranes and one 5-ton two-motor pillar cranes from the Whiting Corporation and two 20-ton overhead cranes from the Manning, Maxwell & Moore Shaw Electric Crane Works.

Track Specialties

THE ST. LOUIS SOUTHWESTERN is inquiring for 15,000 kegs of spikes.

The National Railways of Mexico are inquiring for 1,250,000 tie plates.

THE NORFOLK & WESTERN is inquiring for 15,000 kegs of spikes and bolts.

THE WARASH is contemplating the purchase of a quantity of tie plates.

THE CHICAGO, ROCK ISLAND & PACIFIC has divided an order for 6,500 kegs of spikes and 6,000 kegs of bolts between the Inland Steel Company and the Illinois Steel Company.

THE MISSOURI PACIFIC has divided an order for 3,800 kegs of bolts and 2,000 kegs of spikes between the Inland Steel Company, the Illinois Steel Company, the Tennessee Coal, Iron & Railroad Company and the Jones & Laughlin Steel Corporation.

Signaling

The Atchison, Topeka & Santa Fe has placed an order with the General Railway Signal Company for one Model 2 unit lever type electric interlocking machine having 33 working levers and 7 spare spaces, for installation at Redondo Junction, Cal. The order also includes 3 Model 2A 3-position upper quadrant dwarf signals, non-adjustable lock rods and switch adjustments.

The Pittsburgh & Lake Erie has placed an order with the General Railway Signal Company for one 40-lever electric interlocking machine, having 32 working levers and 8 spare spaces for installation at Beaver Falls, Pa. This order also includes 17 forced drop lever locks, 12 Model 5A switch layouts, four 2-arm position light signals, 8 position light dwarf signals, 4 clockwork time releases, one illuminated track diagram, 76 Model 2 Form B relays, one Type K1 transformer and 42 Type K-½ transformers.



British Railways Exchange Locomotives for Test Purposes

The London & North Eastern and the Great Western Exchange Recent New Power for Extensive Tests, Illustration Shows Crowd Gathered by Unusual Sight of an L. N. E. Locomotive at the Great Western's London Terminal, Paddington.

Supply Trade News

- S. H. Worrell has been appointed district sales manager of the Detroit Seamless Steel Tube Company, with headquarters at Detroit, Mich.
- T. V. Buckwalter, chief engineer of the Timken Roller Bearing Company, Canton, Ohio, has been elected vice-president in charge of engineering.
- The National Forge Company, Louisville, Ky., has appointed E. H. & R. W. Benners as its representative in New York, for the sale of its knuckle pins and "S" and "Z" irons.
- John A. Zupez has been appointed mechanical engineer of the More-Jones Brass & Metal Company, St. Louis, Mo. Mr. Zupez was formerly in the general mechanical engineer's office of the Missouri Pacific.
- H. C. Boyden, lecturer for the Portland Cement Association on subjects pertaining to the proper use of concrete, has resigned to become dean of the engineering department of Ohio Northern University, Ada, Ohio.
- Jesse C. Bader, formerly representative of the McMyler Interstate Company, with headquarters in Chicago, has been appointed western sales manager of the Ohio Locomotive Crane Company, with headquarters in Chicago.
- J. C. Dawes, formerly with the Weldcraft Company, Pittsburgh, Pa., has been appointed a sales representative at the Pittsburgh branch of the International Oxygen Company, Newark, N. J. L. W. McCullough has been appointed sales representative for the branch at Toledo.
- R. L. M. Taylor has been appointed district sales representative of the New York State and Eastern Pennsylvania territory, known as the Reading district of the Reading Iron Company, Reading, Pa. Mr. Taylor joined the Reading Iron Company one year ago, after serving for five years with the A. M. Byers Company.
- The Dempsey Furnace Company, Jersey City, N. J., has been consolidated with the W. N. Best Corporation, 11 Broadway, New York City. The combined furnace business of the two companies will in future be operated as the Dempsey furnace division of the W. N. Best Corporation under the personal direction of H. B. Dempsey.
- William J. Miskella has opened an office and laboratory at 1164 West Twenty-second street, Chicago, where he will specialize as a consulting engineer on lacquer, japan and enamel finishing problems. Mr. Miskella was formerly for many years branch manager of the DeVilbiss Manufacturing Company and president of the Lamberson Japanning Company.
- Brownrigg L. Norton, for the past two years representative at New York, of the Western Railway Equipment Company and the Railway Devices Company, of St. Louis, Mo., has resigned the above representation to become sales agent of the Scullin Steel Company, St. Louis, Mr. Norton's headquarters will be in the New York office of the company at Room 2050, Grand Central Terminal, New York.
- Elmer E. Ross, a director of the Positive Lock Washer Company, Newark, N. J., has been elected president to succeed George Hendricks Denman, Sr., who died on April 17. Mr. Ross is the son of the late John B. Ross, originator of and former president of the Positive Lock Washer Company. Elmer E. Ross started with the company in 1903, working up to assistant secretary. In 1912 he resigned to go into the lumber business, which interests he still holds, being treasurer of the National Box & Lumber Company, Newark, N. J. In December, 1919, Mr. Ross was elected a director of the Positive Lock Washer Company.

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The Taylor Wharton Iron & Steel Co., High Bridge, N. J., and Wm. Wharton, Jr., & Co., Easton, Pa., have reorganized their method of sales representation in New York City by making a commission office of it under the direction of C. N. Shaffner, formerly northeastern sales manager of these companies. Under the new arrangement, Mr. Shaffner has associated with him W. H. Allen, also formerly with the sales organization of the above mentioned companies, the two forming a partnership known as Shaffner & Allen, and utilizing the former office and facilities of the Taylor Wharton Iron & Steel Co., and Wm. Wharton, Jr., & Co., at 50 Church street. The newly organized sales office will also handle the New York and other eastern territory sales for the following companies: Ashland Firebrick Company, Ashland, Ky.; the Lang Broom Company, Pittsburgh, Pa.; Samuel Peterson, Inc., Warren, Pa.; and the Northwestern Motor Company, Eau Claire, Wis.

C. W. Marshall has been appointed eastern sales manager of the Sunbeam Electric Manufacturing Company, Evansville, Ind. Mr. Marshall will have his office in the Grand Central Terminal, New York. He was formerly Chicago district manager of the American Arch Company, New York.

G. L. Walters, manager of sales, railroad and brass department of the Adams & Westlake Company, Chicago, has been elected treasurer of the company. W. H. Baldwin, former-



C. W. Marshall

ly vice-president and treasurer, continues as vice-president.

A. S. Anderson, representative at Chicago, has been promoted to general sales manager with the same headquarters. William J. Piersen, representative at Chicago, has been promoted to western sales manager, with the same headquarters. H. G. Turney, representative at Chicago, has been promoted to southern sales manager, with the same headquarters. The position of general sales manager, western sales manager and southern sales manager are newly created.

Obituary

Edward Payson Bigelow, sales agent for the American Steel Foundries Company, New York, died on July 20 at his home in New York from apoplexy, at the age of 81.

Trade Publications

CINDER PLANTS.—In a 12-page folder, the Roberts & Schaefer Company, Chicago, presents a demonstration of the various adaptations of its N. & W. cinder plant. These cover the range embraced by the N. & W. Junior plant designed for light service and those installations designed to serve a number of tracks with one or more dumping points on each track. They cover also the use of the N. & W. idea in a combined cinder loading and coaling plant.

"PLEASE, DADDY, STOP." This is the title of a safety poster which has drawn a prize from the Baltimore & Ohio Railroad, under an offer made to children of employees. The picture shows, at the approach to a crossing, an automobile in which a child thus appeals to his father. The prize winners are George H. O'Neal and Harry Kerst. Second prize went to Dorothy Wheeler. Seventeen other prizes were awarded to children of employees in Maryland, Pennsylvania, Ohio and other states.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—Improvements will be made on the line of the Grand Canyon Railroad, a subsidiary, between Williams, Ariz., and the Grand Canyon, at a cost estimated at approximately \$300,000. The plans for the improvements have not yet been completed, but they will include a power house of large capacity at Grand Canyon.

Baltimore & Ohio.—A contract placed by this company with Pittsburgh Construction Company of Pittsburgh, Pa., covers the erection of superstructures of two bridges on the line between Cincinnati and St. Louis. The new structures consist of plate girder spans, ranging in length from 40 ft. to 97 ft. The total weight of steelwork comprised is approximately 150 tons.

Bruce Lumber Company.—A standard gage lumber road, 22 miles long, from Bryant, Miss., to Bruce, will be constructed by day labor.

Canadian National.—Damage estimated at \$500,000 was caused by a fire at this company's shops at Bridgewater, Nova Scotia, last week. Most of the buildings, together with eight locomotives, a number of freight cars and a large quantity of stores were destroyed. The buildings consumed included the roundhouse, machine shop, car shop, boiler shop, master mechanic's office and some smaller buildings. Some damage, too, was done to the station on the opposite side of the tracks. Seven of the eight locomotives destroyed were serviceable, and the eighth was undergoing repairs.

CHICAGO & NORTH WESTERN.—The Interstate Commerce Commission has authorized the company to extend its line from Wakefield, Mich., northwesterly 4.2 miles at an estimated cost of \$213,600.

CHICAGO, AURORA & ELGIN (Electric).—Through a subsidiary, the Chicago, Westchester & Western, it is planned to construct a branch line from the present main line at Bellwood, Ill., southerly and westerly through Cook and du Page counties to connect with the main line again at Warrenville. Only a small section of the proposed line south of Bellwood will be built this year.

CHICAGO, BURLINGTON & QUINCY.—Bids are being received for the construction of a 4-stall extension to the roundhouse at Hannibal, Mo.

CHICAGO, BURLINGTON & QUINCY.—A contract for the construction of a brick power house and the moving and re-setting of four boilers at Galesburg, Ill., reported in the Railway Age of June 20, has been awarded to G. A. Johnson & Sons, Chicago.

Dallas Union Terminal.—The construction of an addition to the concourse of the Union Station at Dallas, Tex., at a cost of \$140,000, has been authorized. Two tracks will be added to the present station facilities.

ERIE.—A contract for a large, modern pier at Jersey City, N. J., to replace facilities destroyed by fire last winter, has been awarded to Foley Brothers, New York.

Great Northern.—A contract has been awarded to the Grant Smith Company, St. Paul, Minn., for grading and bridge construction on the 50-mile extension from Scobey, Mont., to Opheim, reported in the *Railway Age* of May 30. The extension will cost about \$1,500,000.

ILLINOIS CENTRAL.—The roundhouse of the Yazoo & Mississippi Valley at Natchez, Miss., is to be remodeled.

INDIANA HARBOR BELT.—Bids are being received for the construction of a pumping plant and reservoir at Belmont Avenue, Chicago.

LOUISIANA RAILWAY & NAVIGATION COMPANY.—This company has applied to the Louisiana Public Service Commission for permission to relocate its line between Moreauville, La., and Naples, a distance of 18 miles, to replace the present line, which would be abandoned. The proposed line would extend from Moreauville to Torras opposite Angola, and would eliminate

the long ferry haul between Naples and Angola on the Mississippi and Red rivers.

MISSOURI PACIFIC.—The Interstate Commerce Commission has authorized this company and the Illinois Central to build a 3.5-mile line from the Missouri Pacific's line at South Dupo, Ill., to Krause, to serve a large stone quarry, estimated cost,

MISSOURI PACIFIC.-A contract has been awarded to Walter G. Denison, Cushman, Ark., for the grading of 10 miles of second track between Cypress Junction, Ark., and Denton, reported in the Railway Age of July 4. The ballasting and rail laying will be done by company forces, the total cost of the project being estimated at \$395,000. A contract has been awarded to Jerome A. Moss, Chicago, for the construction of a one-story concrete and steel machine shop at Bush, Ill., reported in the Railway Age of June 20. A contract for the construction of a six-stall concrete roundhouse at Bush has been awarded to the H. O. Hirsch Construction Company, St. Louis, Mo.

MOBILE & GULF.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the purchase of a line running from a connection with the Southern at Fayette, Ala., southerly 29 miles and an extension of the line to a connection with the Mobile & Ohio at Buhl, Ala., 3 miles, making a total of 32 miles which the company desires to operate.

NATIONAL RAILWAYS OF MEXICO.—This company plans improvements to the line from Guadalajara, Jalisco, to Manzanillo, a distance of 357 miles, to restore it to good condition. In connection with the project, breakwaters and wharves will be constructed at Manzanillo.

QUANAH, ACME & PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from MacBain to Floydada, Tex., 27

Southern.-Bids are being received for the construction of a steel coaling station at Mount Vernon, Ill.

St. Louis-Kansas City Short Line. (Electric).—A writ of certiorari for a review of the decision of the Missouri Public Service Commission denying authority to construct an electric railway between St. Louis, Mo., and Kansas City, has been granted by the Cole county circuit court at Jefferson City, Mo. The writ is returnable on August 8 at which time the commission must show cause why the writ should not be made permanent. As reported in the Railway Age of June 13, the commission denied the application of the company on the grounds that its financial ability to pay the cost of constructing and operating the proposed line had not been established.

St. Louis-San Francisco.—Bids are being received for the construction of a freight and passenger station at Fayetteville,

St. Louis-San Francisco.—A contract for the construction of a passenger station, to be used jointly by the Missouri Pacific and the St. Louis-San Francisco, at Hoxie, Ark., has been awarded to J. H. Leveck & Son, Arkansas City, Kan.

St. Louis-San Francisco.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an industrial spur track from a point near Covington, Okla., northeasterly to the Garber oil field.

TEXAS & PACIFIC.—Bids will soon be received for the construction of the superstructures of a machine shop and a roundhouse at Shreveport, La. As reported in the Railway Age of February 28, the whole project at Shreveport will cost a total of \$925,000.

WABASH .- Bids are being received for the construction of a freight and passenger station at Taylorville, Ill.

Governor of Florida Says New Railway Planned There

Governor John W. Martin of Florida, in an interview given out in New York last week, announced that a group of capitalists from the middle west had purchased 2,000,000 acres of land in Florida and were planning the construction of 300 miles of railway to develop the property.

Railway Financial News

Angola Transfer.—Final Valuation.—The Interstate merce Commission has issued a final valuation report as of 1917 finding the final value for rate-making purposes of the property owned and used for common-carrier purposes to be \$160,000

BUFFALO, ROCHESTER & PITTSBURGH .- Bonds .- This company has applied to the Interstate Commerce Commission for authority for an issue of \$1,186,000 consolidated mortgage 4½ per cent

CADIZ.-Final Valuation.-The Interstate Commerce Commission has issued a final valuation report finding the final value for rate-making purposes of the property owned and used for common carrier purposes to be \$120,500 as of 1917.

CENTRAL PACIFIC.—Bonds.—This company has applied to the Interstate Commerce Commission for authority for an issue of \$40,000,000 of 5 per cent bonds, to be guaranteed by the Southern Pacific, to reimburse the treasury for expenditures for additions and betterments. It is proposed to sell the bonds to Kuhn, Loeb & Co., at 95.

CHICAGO, MILWAUKEE & St. PAUL.—Special Master of Chancery Appointed.-Herbert J. Lundahl, a Chicago attorney, has been appointed special master in chancery to hear evidence on bankruptcy proceedings of the Chicago, Milwaukee & St. Paul. The appointment was made by Federal Judge Wilkerson at

CHICAGO, MILWAUKEE & St. PAUL .- Time for Deposit Extended.-The time for deposit of securities under the reorganization plan has been extended to September 15.

Kuhn, Loeb & Company and the National City Company, reorganization managers, in announcing this extension of time issued a statement saying in part:

I. The deposits of securities to date indicate a very encouraging support of the plan by security holders. . . The discussion of the proposals of those who counsel delaying reorganization pending the outcome of efforts to secure increased freight rates for the western carriers and an extension of the \$55,000,000 of notes held by the government, which at first seemed to confuse the issues, has, in the end, been helpful in that it has been made clear that there are no advantages to be gained from delaying reorganization that are comparable to the manifest advantages of a prompt recrpanization.

II. There can be no possible gain from a mere extension of the railway company's debt to the government (as distinguished from the funding of that debt into long term obligations) inasmuch as a continuation of that debt as a short term obligations would be a constant drag upon the new company's credit and would seriously weaken its financial structure, since there would be no certain method of providing for the debt except by the sale of bonds which, under the present plan, are reserved for future capital requirements. The bondholders' committee, whose members represent insurance companies, savings banks and individuals who are the largest holders of the railway company's bronds, is unalterably opposed to any plan which contemplates the mere extension of the government debt.

To await the outcome of a possible further effort to fund the government debt into long term obligations would be equally fruitless. Considering the value of the cellateral held by the government, there is no ground for hoping that the efforts of the proponents of the policy of delay would be more successful than the efforts heretofore made to induce the government to fund its debt into long term obligations which wculd meet the requirements of the bondholders' committee that such obligations must be junior in rank to the bonds created to provide for future capital requirements, and be taken at their full principal amount and at a rate of interest not

at their full principal amount and at a rate of interest not exceeding five per cent. per annum.

It is therefore clear that delay in reorganization until the outcome of a further effort to deal with the government debt would be futile.

III. There can be no difference among security holders as to the importance of making every possible effort to secure an increase in rates for the western carriers and for the Chicago, Milwaukee & St. Paul System in particular. That the receivers intend to spare no effort to that end is shown by their recent retention of Hon. Charles E. Hughes to represent them in rate proceedings. There is, however, no sound reason for delaying reorganization pending the outcome of the efforts to secure a rate increase. On the centrary every argument favors an early reorganization.

There is no assurance as to how soon an increase in rates will blained.

be obtained.

2. Delaying the reorganization will in no way aid or hasten the effort to obtain higher rates.

3. An increase in rates would not make it advisable to modify the present plan of reorganization for it weuld clearly be unwise to reorganize the Chicago, Milwaukee & St. Paul System under any financial structure which would not enable it to survive, without receivership, a repetition of the adverse conditions that have prevailed during recent years. It must be remembered that for the four years ended December 31, 1924, the railway company failed to earn its fixed charges by an average of over \$5,000,000 a year, and if effect were given to the increased rates for depreciation of equipment and certain other items as recommended by Coverdale & Colpitts the deficit would have been substantially larger. Moreover, it is essential to a sound reorganization that the new company be provided with a financial structure under

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which it will be able to finance future capital expenditures and refund underlying bonds at the lowest possible cost.

4. The plan assures that the security holders will fully participate in their relative order of priority in any benefits obtained through an increase of rates or other favorable developments. In this connection, special attention is called to the provisions of the Plan which make it mandatory that each year all available net income be applied to the payment of the interest and, beginning 1936, to the sinking fund upon the new adjustment bonds (except that the board of directors may staide not to exceed one-half of the first \$10,000,000 of such available net income for defined expenditures, chiefly for capital account) and that until the expiration of the five-year period after which interest upon the adjustment bonds becomes cumulative, the board of directors of the new company will be elected by voting trustees of whom a majority will represent the adjustment bonds. On the other hand so long as the receivership continues the entire income of the property not required for interest on underlying bonds will undoubtedly be devoted to capital expenditures and thus be diverted from the payment of interest on the junior bonds.

V. It will thus be seen that the advantages claimed for delaying reor-

expenditures and thus be diverted from the payment of interest on the junior bonds.

1V. It will thus be seen that the advantages claimed for delaying reorganization will not stand analysis, while the advantages of a prompt reorganization and an early termination of the receivership are manifest. Among those advantages are: (1) avoiding the damage to the goodwill of the property inevitably involved in a prolonged receivership; (2) avoiding a continuation of the heavy current expense incident to receivership; (3) avoiding the increased cost of financing capital expenditures which could be financed at a lower cost by the new company with re-established credit than would be possible during a receivership; (4) avoiding the lors due to continuance of the Government debt at six per cent. interest; (5) avoiding the reduction in the amount of earnings available for interest upon the bends which the foregoing and other losses incident to receivership would entail; and (6) hastening the time when the earnings of the property will become available for current distribution among the security holders.

Potter Defends Rate Plan .- Mark W. Potter, receiver of the Chicago, Milwaukee & St. Paul, has issued a statement answering critics of his recently proposed plan. He said in part:

"No one will seriously contend that a rate increase, the proceeds of which are to be pooled and divided among carriers in the ratio in which they have failed to earn a fair return, is illegal. Such an arrangement serving the public interest is expressly authorized by Section 5 of the Interstate Commerce act. Every rate increase must be approved by the Interstate Commerce act. Every rate increase must be approved by the Interstate Commerce act. Every rate increase must be approved by the Interstate Commerce commission either expressly or inferentially through failure to suspend the tariff. As between two or more legal methods, the commission can give its approval to that method which best serves the public interest. As carriers may just as legally make an increase with the proceeds pooled as they can with the proceeds unpooled, the commission can give permission to an increase in the former method and deny the latter if the former is deemed best to serve the public interest.

"The right of carriers under fundamental law and the aim of the Trarsportation act is to obtain a fair return without excess or deficit to any. If the result of a pooled increase would bring the carriers generally closer to the fair return line and diminish the exceptions both above and below the line, it may be found that the pooled increase best serves the purposes and interests of all concerned.

"It must be remembered, too, that the Interstate Commerce Commission has power under the Transportation act to fix minimum as well as maximum rates. There is power, too, in the commission to reopen Increased Rates 1920, by which a 35 per cent. increase was allowed in the Western district, and to restate the authority there given so as to provide that a part of the earnings from the increased rates be pooled. The question, however, is not one of power in the commission. A pooled increase being perfectly legal, it is to be assumed, of course, that carriers readily will acquiesce in that conclusion, which is found to be right and just in that it te

Снісадо, Rock Island & Pacific.—Notes.—This company has applied to the Interstate Commerce Commission for authority to issue \$7,500,000 of three-year 4½ per cent secured notes to be used in part payment for stock of the St. Louis Southwestern, and to be secured by \$13,480,000 of its preferred stock.

Bonds.—The Interstate Commerce Commission has authority to procure authentication and delivery of 450,000 first and refunding mortgage bonds, to be held subject to further order of the commission.

DELAWARE & HUDSON .- To vote on B. R. & P. Lease .- A meeting of the stockholders of the Delaware & Hudson Company has been called for September 8 to vote on the proposed lease by the company of the Buffalo, Rochester & Pittsburgh.

FLORIDA EAST COAST .- Equipment Trust .- The Interstate Commerce Commissison has approved the issuance of \$1,350,000 equipment trust certificates, series F, to be sold at 97.125 per cent of par, making the average annual cost to the company 4.93 per cent. The company had proposed to sell the certificates at 96.5 per cent of par, at which the annual cost would have been 5.065 per cent. Commissioner Eastman dissented. The equipment includes 21 locomotives and 32 passenger train cars having a total estimated cost of \$1,741,745. The certificates are to be dated August 1. 1925, and mature in annual installments, 1926 to 1940, inclusive.

LOUISIANA RAILWAY & NAVIGATION Co., OF TEXAS.— Securities.—The Interstate Commerce Commission on rehearing has affirmed its original report and order, authorizing the issue of \$400,000 of common capital stock and \$750,000 of first-mortgage 6 per cent bonds.

MANISTIQUE & LAKE SUPERIOR .- Final Valuation .- The Interstate Commerce Commission has issued a final valuation report as of 1915 finding the final value for rate-making purposes of the property owned and used for common-carrier purposes to be \$668,000.

MICHIGAN CENTRAL.—Tentative Valuation.—The Interstate Commerce Commission has made public a tentative valuation report, as of June 30, 1918, finding the final value for rate-making purposes of the property owned to be \$130,858,402 and that of the property used to be \$150,703,973. The outstanding capitalization was \$71,475,243 and the book investment in road and equipment \$99,422,450. This the report readjusts to \$95,381,001. The cost of reproduction new of the property owned was reported as \$117,362,135 and the cost of reproduction less depreciation as \$90,102,062. The cost of reproduction new of the property used was reported as \$134,537,612 and the cost of reproduction less depreciation as \$104,600,427. A total of 17,662 acres of land owned was given a present value of \$33,565,401 and 20,784 acres of land used a present value of \$36,504,399. The company owned securities of other companies of a par value of \$18,820,143 and a book value of \$11,408,685.

MINNEAPOLIS & St. Louis.-Receiver's Certificates .- The receiver has applied to the Interstate Commerce Commission for authority for an issue of \$200,000 of receiver's certificates, in renewal of a like amount outstanding.

MURFREESBORO-NASHVILLE SOUTHWESTERN. - Operation .- This company has applied to the Interstate Commerce Commission for a certificate authorizing it to operate a line from Nashville Murfreesboro, Ark., 15 miles, formerly operated by the Memphis, Dallas & Gulf.

SAN DIEGO & ARIZONA.—Notes.—The Interstate Commerce Commission has granted authority for the issuance of promissory notes totaling \$2,127,956, payable in equal amounts to the Southern Pacific Company and to the J. D. & A. B. Spreckels Company respectively, the proprietory companies. The notes are to be dated July 16, 1925, and payable one day after date and bear interest at 6 per cent from July 15, 1921, and are for renewal of previous notes. The notes aggregate more than 5 per cent of the par value of the company's outstanding securities.

LOUIS-SAN FRANCISCO.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Jonesboro, Lake City & Eastern by acquisition of its stock and by lease.

Western Pacific.—Control of Sacramento Northern Authorized.—The Interstate Commerce Commission has authorized the Western Pacific Railroad Company to acquire control of the lines and other property of the Sacramento Northern Railroad by purchase of the latter's bonds and stocks now held by the Western Pacific Railroad Corporation, the purchase being made from the proceeds of the sale of \$4,180,000 first mortgage bonds hitherto authorized.

The properties of the Sacramento Northern Railroad will be owned by the Sacramento Northern Railway.

The latter company has been authorized to issue \$1,000,000 capital stock consisting of 10,000 shares of par value of \$100, which with the exception of directors' qualifying shares, will be sold to the Western Pacific at par and the proceeds used to purchase the properties of the Sacramento Northern Railroad and for working capital. The Sacramento Northern Railway has also been authorized to assume obligation and liability in respect of \$5,224,373 of first mortgage 5 per cent bonds of the Sacramento Northern Railroad.

Dividends Declared

Mine Hill & Schuylkill Haven.—\$1.50, payable August 1 to holders of record July 17.

Nashville, Chattanooga & St. Louis.—3½ per cent, payable August 3 to holders of record July 25.

Trend of Railway Stock and Bond Prices

J	uly 21	Last Week	Last Year
Average price of 20 representative rail- way stocks	81.65	81.33	71.40
way bonds	90.39	90.53	88.63

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Railway Officers

Financial, Legal and Accounting

Samuel H. Cady, who has been promoted to general solicitor of the Chicago & North Western, with headquarters at Chicago, was born at Reedsburg, Wis., and was graduated from

the College of Letters and Science of the University of Wisconsin in the class of 1895. He received his degree from the College of Law of the same university in 1897 and at once engaged in the private practice of law at Green Bay, Mr. Cady remained there until 1921, when he began his railway Wisconsin service as attorney of the Chicago & North Western, with headquarters at waukee, Wis. He was promoted to assistant general solicitor, with headquarters at cago, in 1924, and con-



S. H. Cade

tinued in that capacity until his recent promotion to general solicitor, with the same headquarters.

Operating

A. F. Bowles, who has been promoted to superintendent of the San Joaquin division of the Southern Pacific, with headquarters at Bakersfield, Cal., was born in Meigs County, Ohio,

entered railway service in March, 1885, in the construction department of the Ohio Central, now a part of the New York Central. Shortly afterward he was transferred to the transportation department where he remained until December, 1887, when he entered the service of the Southern Pacific as a freight brakeman on the Los Angeles division. In September, 1892, he was freight promoted to conductor and he later served as passenger conductor, being promoted to trainmaster of the San Joaquin divi-



A. F. Bowle

sion in July, 1907. In September of the same year Mr. Bowles was promoted to assistant superintendent of the Tucson division. He was transferred to the Sacramento division in December, 1908, and in November of the following year was transferred to the Los Angeles division. He was serving there at the time of his recent promotion to superintendent of the San Joaquin division.

C. F. Urbutt, trainmaster of the Illinois division of the Chicago, Milwaukee & St. Paul, with headquarters at Savanna, Ill., has been promoted to acting superintendent of the Illinois division, succeeding O. M. Stevens, who has been assigned to other duties. H. E. Sittler has been appointed trainmaster, succeeding Mr. Urbutt.

C. J. Connett, assistant superintendent of the LaCrosse division of the Chicago, Burlington & Quincy, with head-quarters at Daytons Bluff, Minn., has been promoted to superintendent of the Omaha division, with headquarters at Omaha, Neb., succeeding N. C. Allen, who has resigned. K. W. Fischer has been appointed assistant superintendent of the LaCrosse division, in place of Mr. Connett.

Traffic

R. J. Menzies has been appointed assistant traffic manager of the New York Central, with headquarters at New York, succeeding D. L. Gray, resigned, to become vice-president of the Erie. J. P. Patterson, division freight agent of the New York Central at Toledo, Ohio, has been appointed assistant to the traffic manager at New York. These appointments are effective August 1.

Mechanical

J. A. Marshall, assistant master mechanic of the Fargo division of the Northern Pacific, with headquarters at Staples, Minn., has been promoted to master mechanic of the Pasco division, with headquarters at Pasco, Wash., succeeding C. A. Wirth, deceased. E. H. Carlson has been appointed assistant master mechanic of the Fargo division in place of Mr. Marshall.

G. M. Wilson, superintendent, motive power shops, of the Canadian National, with headquarters at Montreal, Que., has been transferred to Stratford, Ont., succeeding John Roberts, who has been appointed general supervisor of shop methods, with headquarters at Montreal, a newly created position.

A. McDonald has succeeded Mr. Wilson at Montreal. Mr. McDonald is 37 years of age. He was born at Stratford, Ont., and entered the service of the Grand Trunk in Stratford when he was 16. He was apprenticed to both the machinist's and fitter's trades, spending 7 years in acquiring both. On completion of his apprenticeship he served in those capacities until he was given a minor foremanship a few years later. In 1917 he was promoted to assistant superintendent of the shops at Point St. Charles. In 1919 he was appointed acting superintendent of motive power, Eastern lines, and served in that capacity for a short time, returning later to his post as assistant superintendent at Point St. Charles, in which capacity he was serving at the time of his recent promotion.

Engineering, Maintenance of Way and Signaling

C. S. Kirkpatrick, chief engineer of the Gulf Coast Lines, with headquarters at Houston, Tex., has been appointed also chief engineer of the International-Great Northern. F. S. Schwinn, chief engineer of the International-Great Northern, has been appointed assistant chief engineer of both the Gulf Coast Lines and the International-Great Northern, with headquarters at Houston.

Purchasing and Stores

A. J. Mello, purchasing agent of the San Diego & Arizona, has been appointed general storekeeper of the Pacific Fruit Express, with headquarters at San Francisco, Cal.

Obituary

Allan Bourn, formerly purchasing agent of the Michigan Central, died at Dorset, Vt., on July 13.

J. T. Hughes, of St. Paul, Minn., vice-president of the Order of Railway Conductors, died at St. Paul, on July 20, after an illness of four weeks.

R. E. Farmer, trainmaster of the Wichita Falls & Southern, with headquarters at Wichita Falls, Tex., died on a Southern Pacific train near Roseburg, Ore., on July 18.

Col. James L. Taylor, at one time European representative of the Pennsylvania, and for the past 15 years lecturer in the United States and Canada for the Bureau of Explosives, died on July 17, at New York, at the age of 78.